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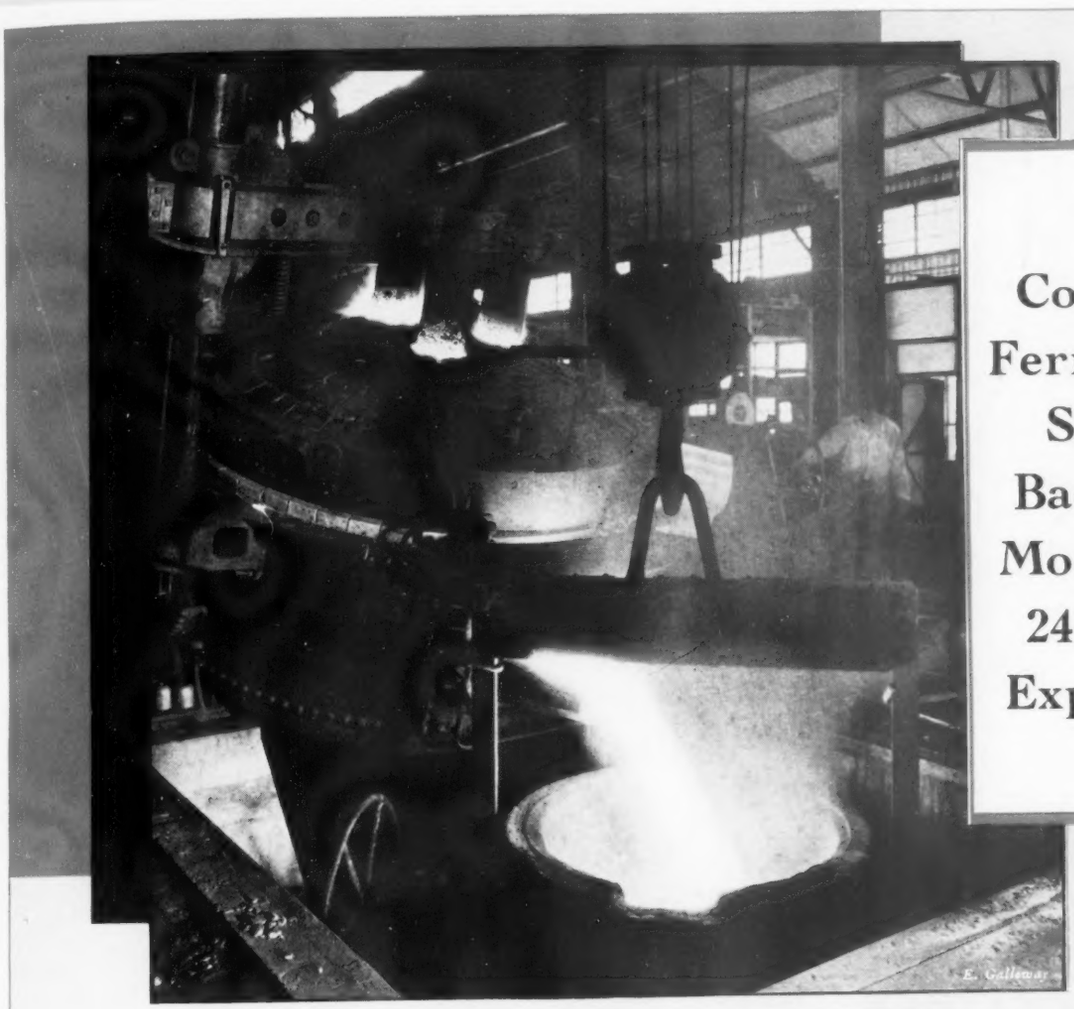
December 11, 1930



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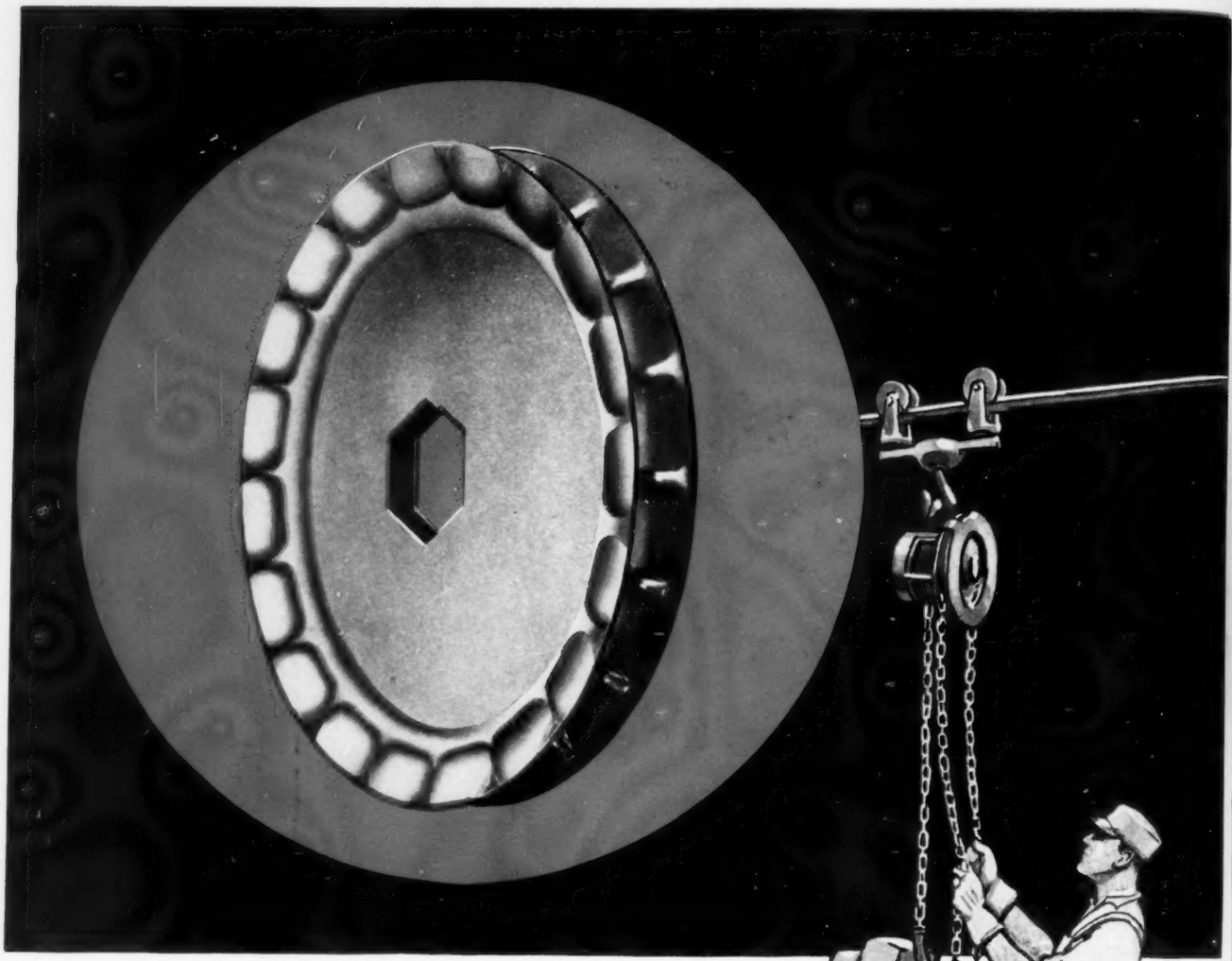

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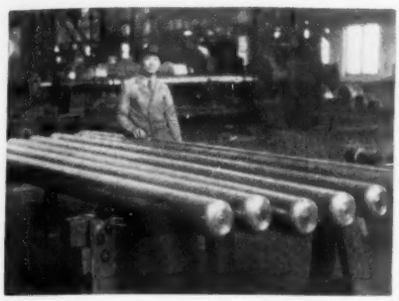

Alloy Steel Forgings in Wider Demand. Page 43.

THIS WEEK:

APPROPRIATION bills are unusually conspicuous at this session of congress, and the force depended upon to put many of them "over" is the plea that they will alleviate unemployment. The President after submitting his recommendation for $100,000,000 to $150,000,000 for federal work warned congress against extravagance, while bills calling for more than $4,500,000,000 additional were rushed into the hopper. Business men will watch developments at this session. Under the caption "The Business Week in Washington" STEEL will present the high-spots of the week's news from the capital. Page 24.

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Volume 87 Number 24

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

BILLS, bills, bills to cure the country's economic ills pour in on congress. If the four and one-half billion dollars for special labor and farm relief asked for at this session are allowed it is going to cost us more to get out of this depression than it did to get in. Among the bills is one for $50,000,000 for a "destitution fund" (Page 26). . . . The political gestures at Washington, and such most of the "relief" measures are at present, lead the President to urge economy, and bring a warning from Secretary Mellon of an inflation in taxes (Page 26). . . . It becomes more evident this session will be devoted mainly to discussion of unemployment. In Britain a plea for a "double dole" for the unemployed as a Christmas gift is voted down in parliament (Page 108), a suggestion of what may come to pass with an over-generous legislative body in session. . . . Far better than paying the bill in taxes for indiscriminate emergency work, or no work, is to pay the money directly for necessary work, well planned. "Social engineering"—the application of the engineering principle for the economic welfare of the nation—is advocated at the American Society of Mechanical Engineers' convention. Col. Arthur Woods personally appeals for and is pledged the society's co-operation (Page 25). . . . A shorter week or shorter day may prove to be the solution of the unemployment problem, according to opinions expressed at the meeting of the Taylor society (Page 26).

Senators Heckle Industry for Stabilization

It is unlikely sharp criticism aimed by three senators at the steel industry for making efforts to stabilize prices will be considered more than gestures. A few rockets having been sent up (Pages 31 and 34), the fireworks subside, without as much as "a resolution" marking their progress—and the steel industry goes on, paying pre-depression wage rates, doing more to stabilize economic conditions than any other one basic factor. With plates, shapes and bars advanced $1 a ton, prices still are $5 a ton less than they were at the beginning of the year (Page 79). . . . Steel ingot production drops below 45 per cent of capacity in November, with a total output of 2,234,482 tons for the month. If December should equal the November tonnage, which it probably will not, output for the year would be 39,879,247 tons, the lowest since 1924. Nineteen-thirty probably will go down as a 63 per cent year, compared with 89.05 per cent for 1929 (Page 27).

Steel Prices $5 Lower Than in January

Steel has taken its price reductions gradually, with declining production, while ferromanganese on which prices are set 12 months in advance drops $14 a ton at one fell swoop. The

Photo by Eugene Hutchinson, Chicago

Nocturne in Colorado: The poet of the Colorado Fuel & Iron Co., Pueblo, Colo., writes: "At night the huge furnaces blink their message of hunger for more ore and flux to transmute into iron . . . never satiated . . . "

decrease is really in consonance with the lower level of steel, as for example: Heavy finished material at 1.65c, Pittsburgh, now is 13 per cent under the 1.90c price in effect at the beginning of the year; ferromanganese at $85, duty paid, tidewater for 1931 is 12 per cent less than $99 prevailing in 1929 (Page 94). . . . Consumers of Russian manganese ore, represented by the American Iron and Steel institute's tariff counsel, reply to the American Manganese Producers' association, denying that the ore is dumped in this country. During the war when the market was seven times normal, it is pointed out, domestic producers had to be reimbursed by the government to the extent of $2,500,000. Even though the Russian product be barred, the brief states there are other large deposits in foreign countries pressing for outlet here. The association's brief is said to contain rodomontade, a ten-dollar word meaning vain boasting.

Buyers Sympathetic to Price Rise

The first reaction among buyers to the price advance in heavy finished steel is favorable; it is recognized as a constructive step, tending toward a maintenance of business equilibrium. In the steel industry itself it has strengthened morale (Page 79) . . . though the fact is recognized too little time has elapsed to determine its effect, and the commodity price trend in general still is rather indefinite (Page 35). . . . All Europe is wrestling with the price problem. In Germany the Federal Economic council declares steel must come down, though steelmakers say it cannot. The continental prices are a shade firmer, while British tin plate manufacturers who recently dropped attempts at price control are planning another drive for stabilization (Page 106).

Speed Mechanical Development

Another era of important mechanical developments such as followed the World war is forecast at the meeting of the American Society of Mechanical Engineers. A bulge in production, as in 1929, followed by a demand for low unit cost is the incentive (Page 25). . . . The session devoted to materials handling equipment (Page 48) indicates that efforts already are being concentrated toward the development of new and more efficient units. The meeting is notable for a record registration of 2600. A feature is an exhibition of 200 works of art, including bronzes and paintings, by 79 mechanical engineers. The engineer is supposed to be prosaic; as a matter of fact he has a keen sense of symmetry and harmony. The Bridge Engineers' trio, with Ralph Modjeski at the piano, entertains the guests (Page 25). . . . Crowds tax the capacity of the Grand Central Palace, New York, for the ninth annual power show, exhibitors reporting orders surprisingly good (Page 63). . . . Gas and electric utilities plan a billion-dollar expenditure for expansion in 1931 (Page 24).

Heavy Forgings Made of Alloy Steel

Requirements for large alloy steel forgings for supermachines and pressure process units have assumed extraordinary proportions, necessitating unprecedented dimensions in equipment, and the utmost in forging technique. Recent productions have involved individual ingot weights of 200,000 to 400,000 pounds for finished forgings of 150,000 to 200,000 pounds (Page 43). . . . Quality steel until a few years ago was the product of the crucible furnace, but gas-fired units have given way to the electric induction furnace. By means of the heating arrangement (Page 55) it is possible to attain such high efficiency as to permit the process to compete with other steelmaking methods. . . . The manufacture of access boxes for plumbing, wiring and ventilating lines in apartments, hotels and office buildings now absorbs 3500 tons of steel annually (Page 64).

Better Morale in Automotive Industry

Stimulus given by production of Chevrolet, Hudson-Essex, Willys, Oldsmobile and Hudson-Essex on new models greatly heightens the morale of the automotive industry. It is accepted in Detroit that while improvement may come slowly 1931 is certain to be a better year than 1930 (Page 32). The industry never has had more attractive show windows, with new models by practically all makers, and prices extremely low. Chevrolet specifications are heavy and this maker is aggressive. It is more generally believed in Detroit that Ford plans to bring out a light eight sometime in 1931 to round out his line and to give dealers something more to handle. . . . During the present industrial depression power equipment has been operated along more economical lines. Fuels have been utilized more efficiently; new equipment has been distinguished by its greater simplification and reliability (Page 48).

Steel Wanted for Higher Temperatures

Improvement in the physical qualities of steel by the addition of alloys afforded boiler plants the opportunity of operating steam generating equipment at pressures of 1000 pounds or more. Designers of power plants now challenge metallurgists (Page 50) to give them an alloy steel that will afford higher temperatures and pressures than formerly used. Boiler construction is expected to undergo considerable change in the near future. . . . The ever-increasing importance of research is seen in the work of the Battelle Memorial institute in Columbus, O., which has just attained its first birthday, with a record of important investigation into problems of metals and fuels (Page 58).

Institute Denies Russian Manganese Ore Is Dumped

WASHINGTON — Sweeping denial of the contention of domestic producers of manganese that Russian ore is being dumped in the United States and sharp reproof to domestic producers for presenting unsupportable allegations to the treasury are contained in a brief filed with the customs bureau, treasury department, by the American Iron and Steel institute.

The brief of the institute, filed by Thomas J. Doherty, New York, its tariff counsel, combats the application of the American Manganese Producers' association, of which J. Carson Adkerson is president, for a treasury order making operative the antidumping provisions of the tariff law.

The complaint of domestic producers, the institute alleges, "is not bona fide at all but is being urged and used for some ulterior purpose . . . it is a most singular document . . . contains allegations, charges and discussions utterly foreign to the subject . . . there is so much in it of disingenuousness and rodomontade that its authors must hold in low esteem indeed the intelligence of government officers . . . what there is of truthful statement is mostly irrelevant and what is relevant is largely untrue."

Calls Statements Identical

Statements made by speakers for the domestic association at treasury hearings in August and September are identical with those made before the house ways and means committee when the present tariff act was being considered, the institute contends:

"There will be found the same confession of inability to meet foreign competition, and the same stories of manganese mines closing and manganese miners thrown out of work, without any hint whatever of dumping on the part of foreign countries, such as were set forth in the hearings herein, where all the woes of the manganese industry were laid to dumping of Russian ore.

"In other words, the same representations as to the condition of the domestic manganese industry which were made to the committees of congress in 1929 and 1930 in an effort to secure an increase of 50 per cent in the duty on manganese ore, which condition was at that time alleged to be due to the fact that the existing duty of 1 cent per pound was too low, are now utilized in an attempt to show that said condition is caused by the dumping of manganese ore from Russia.

"The truth requires us to say that what was said by the supporters of this charge of dumping at the hearings before the bureau of customs was 'old stuff' after a manner of speaking, familiar enough to those who like ourselves have been obliged in the course of duty to scrutinize the literary and oratorical output of the American Manganese Producers' association and its constituent members in the various forms in which it has obtained publicity, such as tariff hearings, convention reports, newspaper notices, stock-selling prospectuses, etc., etc.

Claims Proof Not Established

"There has been a complete failure on the part of the complainants to furnish any proof of their charges, and in such case the ordinary course would be to dismiss the case as unsupported. However, it is our desire to present to the department all the information on the subject that is available and as a result of an inquiry from all sources of knowledge on the subject that we could reach, we unhesitatingly affirm that there is no dumping of manganese ore into this country from Russia or any other country, and that all allegations to the contrary are unfounded in fact.

"Under our law an offense of dumping is committed

(1) when the foreign article is sold for export to the United States at a lower price than it is sold for consumption in the country of origin, or

(2) when the foreign article is not sold at all for consumption in the country of origin and it is sold for export to the United States at a lower price than it is sold for export to other countries, or

(3) if the foreign article is neither sold for consumption in the home market, nor for export, and it is consigned or shipped to the United States at less than its cost of production.

"No one of these conditions is applicable to the exportation of manganese ore from Russia and its importation into the United States. In the present instance it appears from the record that the manganese ore which is exported from Russia, comes from the Tchiaturi region in the Republic of Georgia and that it is not sold for home consumption in Russia at all. Therefore, there is no foreign market value for it.

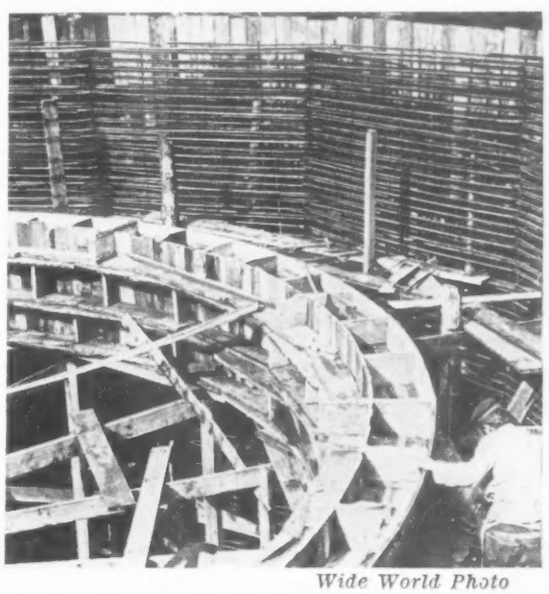
"It further appears that there are world prices for manganese ore including Russian ore and that these prices are open and notorious and are freely quoted in the usual manner, namely, in trade publications and the like.

Quotations Common Knowledge

"Such periodicals are STEEL, published in Cleveland, the *Iron Age* published in New York, and *Stahl and Eisen*, a German metal trades organ. In all of these publications the prices of Russian manganese ore are quoted, together with the prices of Indian ore and Brazilian ore. There is no secret about it.

"Nor is there any significance in the fact that Russia is a large exporter of manganese ore. That country has been a major source of

Soviet Russia has no inferiority complex in her plans for a blast furnace plant. One now building at Magnitogorsk, 180 miles inside the Siberian boundary is planned for annual output of 3,000,000 tons of pig iron. Furnaces will be equal to the largest in the United States. Illustration shows construction of a blast furnace foundation. Arthur G. McKee & Co., Cleveland, are engineers in charge of the erection of this city, referred to as the Soviet Gary.



Wide World Photo

supply of manganese ore for the United States for nearly 50 years, the government statistics showing importations as far back as 1884 and continuously since, except when the supply was cut off during the World war.

"The importation from Russia this past year have not been inordinately large and they are not at all out of line with the total of imports as compared with prior years. On page 34 of the Manganese association's brief, there is an estimate of 742,000 gross tons of manganese ore as the importation of 1930, of which 346,178 tons are expected to be from Russia. It would seem that these figures are greatly exaggerated because up to the end of October, 1930, which is the latest period for which we have the figures, the total from all countries was 507,683 tons and from Russia 205,089 tons.

"The figures for October, furnished by the section customs statistics, custom house, New York, show:

Imported from	Tons
Russia	3,000
Brazil	13,200
British India	6,000
Gold Coast	13,166
Canada	3,936
Java and Madura	502

"On this point the following table is illuminating. The figures therein are taken from publications of the United States department of commerce. The table gives the domestic production and the importations from 1904 to 1929 inclusive:

	Domestic Production(1) Gross Tons	Imports Gross Tons
1904	3,146	106,519
1905	4,118	257,033
1906	6,921	221,260
1907	5,604	209,021
1908	6,144	178,203
1909	1,544	212,765
1910	2,258	242,348
1911	2,457	176,852
1912	1,664	300,661
1913	4,048	345,090
1914	2,635	263,294
1915	9,613	313,985
1916	31,474	576,321
1917	129,405 (2)	629,972
1918	305,869 (2)	491,303
1919	54,957	333,344
1920	94,420	606,939
1921	13,531	401,854
1922	13,404	363,975
1923	31,500	339,536
1924	56,515	540,065
1925	98,324	681,395
1926	46,258	692,108
1927	44,741	682,120
1928	46,860	637,258
1929	60,379	664,269

(1) Domestic production includes all ore over 35 per cent manganese and includes both chemical and metallurgical grades of ore.

(2) The war production during 1917 and 1918 was obtained at an inflated price nearly seven times the normal price. Even in the face of this high price manganese mining was conducted at a loss and Congress enacted the "War Minerals Relief act" under which the manganese miners' losses were reimbursed by the government to the extent of $2,506,112.36.

"As has already been said a considerable part of the manganese ore consumed in this country has been supplied from Russia, but nevertheless the other manganese producing countries—Brazil, British India, the Gold Coast, and of late, Rhodesia—have enormous deposits of manganese ore of the necessary grade for conversion into ferromanganese and even if the Russian ore were cut off there would be no diminution of importations and there would be no advantage whatever to the domestic manganese industry.

"Figures showing the total United States consumption of manganese ore in 1929 are not at hand as this brief is written, but a newspaper item, which gives as its authority the department of commerce figures, states that the domestic manganese ore produced in 1929 was 6.95 per cent of the consumption. It is perfectly obvious that the influence of this very

(*Concluded on Page* 89)

Inland Granted License

Inland Steel Co., Chicago, has signed a continuous-mill license contract with the American Rolling Mill Co., Middletown, O. Other plants licensed by American Rolling Mill include: American Sheet & Tin Plate Co., Gary, Ind.; Repubic Steel Corp., Warren, O.; Otis Steel Co., Cleveland; Youngstown Sheet & Tube Co., Youngstown, O.; Wheeling Steel Corp., Wheeling, W. Va.; Weirton Steel Co., Weirton, W. Va.; Tennessee Coal, Iron & Railroad Co., Fairfield, Ala.; and Gulf States Steel Co., Birmingham, Ala.

Utility Budget a Billion?

New York—Estimate that the gas and electric companies of the United States will spend $1,000,000,000 in expansion during 1931 was voiced by Floyd L. Carlisle, chairman Niagara Hudson Power Corp., in a recent address. However, the greatest problem of the industry, he believes, is to obtain this volume of money on reasonable terms. Mr. Carlisle in warning against government ownership pointed out that approximately $400,000,000 of annual utility taxes would be lost.

Attempts Curb on Soviet

Washington—Senator Oddie, Nevada, has introduced a bill "to prohibit the importation of any article or merchandise from Soviet Russia" while Senator Reed, Pennsylvania, has introduced a bill "to suspend for a period of two years general immigration into the United States."

Senator Oddie's bill provides that the secretary of the treasury prescribe such regulations as may be necessary for its enforcement. The bill has been referred to the senate committee on finance. The Reed bill, referred to the senate committee on immigration, provides that "no immigration visa shall be issued to any alien" until July 1, 1933. Certain exceptions are made in connection with families of those who are already in this country.

Receive Soviet Manganese

Washington—Some 3000 tons of manganese from a Black seat port in Russia was unloaded recently at Montreal, Que., according to Canadian advices received in the department of commerce. The report states that this manganese will be transhipped for midwestern destinations in Canada and the United States. This is said to be the first time in the history of the port that Russian manganese has been brought to Canada, although manganese ore from West Africa is not unknown in Montreal.

The Business Week in Washington

Secretary of the Treasury Mellon signs an order revoking, as of Dec. 3, the antidumping order applying to imports of pig iron from Canada. The treasury finds there is now no dumping from Ontario but instructs customs officers to submit regular reports if they suspicion dumping.

Secretary Mellon informs congress improved business in the fiscal year beginning July 1 should swell federal revenue $251,000,000 over the current year. Like the President, he opposes continuance of the present 1 per cent reduction in income taxes.

Respondents in western and eastern class rate cases have notified the interstate commerce commission the new rates recently ordered cannot be made effective before April 1.

Opposition to the appointment of William N. Doak, Virginia, as secretary of labor, was withdrawn by William Green, president, American Federation of Labor, and the senate has confirmed Mr. Doak's appointment.

Senators Norris, Nebraska; King, Utah; and Walsh, Massachusetts, protest against advance of $1 a ton in heavy finished steel prices, but offer no resolution for investigation by department of justice.

Bills introduced include one by Senator Reed to suspend all immigration for two years; by Senator Oddie to prohibit importation of all articles and merchandise from Soviet Russia; and miscellaneous measures for labor relief to appropriate, according to estimate made by President Hoover, $4,500,000,000 in excess of the $100,000,000 he asked for.

Mechanical Engineers Pledge Support on Employment

STABILIZATION of industry was the keynote of the fifty-first annual meeting of the American Society of Mechanical Engineers held in New York, Dec. 1-6, with a record registration of 2600. Throughout five days, during which more than 30 sessions covering some 20 branches of mechanical engineering, numerous council and committee meetings and several social affairs were held, the subject of employment stabilization came up. The problem was handled constructively, working plans for its solution being discussed, rather than prospective plans.

Attention was focused on this subject when Col. Arthur Woods, chairman of the President's emergency committee for employment, appeared at a general conference. After giving a vivid picture of the gravity of the emergency, he stresed the importance of co-operation of every engineer and every company.

In presenting Colonel Woods a formal resolution of support on the part of the American Society of Mechanical Engineers, Col. Paul Doty, vice president of the society, gave assurance that such co-operation was not simply projected, but actually was in force.

Suggestions Are Offered

Dr. Lillian M. Gilbreth, consulting engineer, Montclair, N. J., and a member of Colonel Woods' committee, presented some impressive suggestions designed to speed up the consummation of individual plans for employment stabilization, plans which otherwise might have awaited further refinement. The importance of spreading work over as many people as possible and of preventing ill-advised migrations of workmen and their families was stressed.

A significant point was the willingness of several noted economists to admit necessity for application of engineering methods to economics. The economists were inclined to attribute the present situation to the fact that developments in engineering and production had progressed faster than had the technique of digesting such developments on the distribution side.

While business may be more or less at a standstill momentarily, the technical sessions left no doubt as to the unprecedented amount of research and resulting development work which is going on in every branch of mechanical engineering.

Just as an era of development followed the hectic production during the World war, so it is equally certain that the hectic production of 1928-29 is to be followed by an equally notable era of engineering development—at the beginning of which we now find ourselves. This will play a large part in business recovery and holds forth as much hope for the engineering profession as does the invitation to participate in the control of the business cycle.

Dr. Elihu Thomson
Given honorary membership in American Society of Mechanical Engineers

Honorary membership in the society was conferred upon Dr. Elihu Thomson, one of the founders of the General Electric Co., whose active career has extended from the latter part of the Civil war, and whose numerous inventions include electric welding. Dr. Thomson, in accepting, stated that although he was an electrical engineer, his work had been to a large degree along mechanical lines, hence he valued the honorary membership for that reason. Dr. Ambrose Swasey, another honorary member, whose active career reaches back as far as does that of Dr. Thomson, made the presentation.

The John Fritz Medal for 1931 was presented to Admiral David Watson Taylor, past-president, Society of Naval Architects and Marine Engineers, and past vice president, American Society of Mechanical Engineers, at the annual dinner. This was in recognition of his notable achievements in hull design and of his distinguished service as chief constructor of the United States Navy during the World war.

Engineers Demonstrate Their Culture in Notable Exhibition of Art Work

AN EFFECTIVE answer to the oft-repeated charge that engineers lack culture was furnished during the annual meeting of the American Society of Mechanical Engineers by the exhibition of art by engineers.

This exhibition, which was held in the Engineering Societies building, New York, Dec. 1-6, included over 200 plasters, bronzes, oil paintings, water colors, etchings, drawings and photographs, representative of the art ability of 79 mechanical engineers —many leaders in their profession.

The exhibition was opened Dec. 1 with a musical program featuring the Bridge Engineers' Trio, made up of Ralph Modjeski, piano, Otis E. Hovey, flute, and John E. Greiner, violin.

After a program of unusually difficult selections, ably executed by this notable trio, Dean Robert L. Sackett, Pennsylvania State college, presented an address on "Art as an Engineer's Hobby." Dean Sackett stressed the value of art—of painting from nature in particular—as restful and capable of diverting the mind from routine of the day into a channel having constructive cultural possibilities.

Dean Sackett spoke with authority for the reason that in the exhibition appeared three water colors of unusual merit which he had executed in moments of leisure.

To the visitor, the exhibition, which necessarily taxed the space available for it, was by no means one of ordinary amateur talent, but rather was one of conservative professional talent. This opinion was shared by competent critics, who hailed the display as one of the finest showings of amateur art ever staged in New York.

It brought out that the seeming gap between engineering and art actually is very narrow, if it exists at all. Both are creative professions demanding imagination and trained sense of proportion. The close relationship between engineering and art is emphasized in the old saying, "What looks right, is right," this adage standing the test when applied to successful structures, whether they be machines, ships, bridges or buildings.

Shorter Day or Shorter Week May Prove Solution to Unemployment Problem

SERIOUS thought must be given to the shorter hour in industry, according to Paul H. Douglas, professor of industrial relations, University of Chicago, Chicago, who led the discussion of technological unemployment at the annual meeting of the Taylor society in New York, Dec. 3-5. The speaker analyzed the trends in different industries which show higher and higher production per man as the years pass. There is no reason to suppose that this improvement will stop, he said, and it is the purpose of the engineer to aid this trend in industry.

Discussion following Professor Douglas's statement indicated the importance of the problem. One engineer pointed out that the public pays for idle plants and advocated greater attention to the development of exports and to the raising of living standards in other parts of the world.

See Hope for Future

Others who discussed the paper felt that these expedients were of the nature of palliatives and while the issue was dodged by some speakers the hope for a basic solution of the problem for future years seemed to lie wholly in the shortening of the work-day or work-week.

One speaker maintained that the only way of preserving the capitalist form of government was for manufacturers to adopt boldly, frankly and quickly a policy of shorter days in industry.

Other sessions of the three-day meeting in New York covered time study, distribution problems and credits. Many bankers were in attendance at the meeting and the growing interdependence of banking and industry was the subject of considerable discussion. Banks can do much to direct funds to industries which should be developed for the improvement of national conditions and to withhold or delay funds from industries which show a marked overproduction, or which for some other reason would hinder progress toward better economic conditions if developed.

Much significance was placed in an industrial employment code, this being the first time that a code of this sort has been seriously considered.

Henry P. Kendall, president and treasurer, Kendall Co., Boston, was re-elected to the presidency, a post he has held since 1928. Other officers elected were as follows: Vice president, Arthur D. Davenport, director and general manager, Sweet-Orr & Co., New York; and treasurer, E. W. Clark, E. W. Clark & Co., Philadelphia. Directors elected to the board were: Francis Goodell, industrial engineer, T. Narmkeag Steam Cotton Co., Salem, Mass.; Hudson B. Hastings, professor, industrial engineering, Sheffield Scientific school, Yale university, New Haven, Conn.; and Harlow S. Person, managing director, Taylor society, New York.

Adopts Two 8-Hour Shifts To Increase Employment

The Milholland Sales & Engineering Co., Indianapolis, designer and builder of automatic drilling machines and special production machines, has adopted the eight-hour day, 48-hour week to increase employment. The company now is operating two shifts a day and six days a week.

Although the eight-hour shift was adopted as a temporary measure, results are reported so satisfactory that it probably will become a permanent policy.

Confer on Unemployment

The third national conference on unemployment in connection with the twenty-fourth annual meeting of the American Association for Labor Legislation will be held at Cleveland, Dec. 29-31.

Among the speakers will be John E. Edgerton, president National Association of Manufacturers, on "Hazards to Local Government"; E. Dana Durand, United States census bureau, on "The Federal Unemployment Census"; Senator Robert F. Wagner on "Unemployment—A National Issue"; and Whiting Williams on "What's on the Workless Worker's Mind."

Plate Institute Meets

New York—Directors of the newly-organized Institute of Steel Plate Construction, 33 West Forty-second street, will meet Dec. 16 at the Engineers club, 32 West Fortieth street, to take further steps in the formation of their institute. Tentative officers will be elected and certain working committees appointed. It is believed that the date of the first annual meeting also will be fixed at that time.

Increase Mill Schedule

Two additional black plate mills were placed in operation at the plant of the Canton Tin Plate Corp., Canton, O., this week, making a total of six of the eight units on schedule. The pickling department, which has been equipped with new tanks, also was started. Automatic tin pots now being installed in the tin house are expected to be ready for coating stock by Dec. 15.

Mellon Forecasts Quarter Billion Gain in Revenue

Washington—Secretary of the Treasury Mellon forecasts a noteworthy pickup in business for the next fiscal year, beginning July 1, 1931, in the form of a $251,000,000 increase in federal revenues.

In the same estimates, recently submitted to congress, the treasury's deficit for the first five months of the current fiscal year increased $197,000,000, to total of $299,427,500. In addition, the full effect of the business depression has not been felt as to income and corporation taxes, returns for which will be noted in the second half of the fiscal year, or after Jan. 1, said Mr. Mellon.

In opposing continuance of the $160,000,000 income tax reduction, Mr. Mellon revealed that shrinkage in incomes and dwindling custom receipts had reduced this year's expected revenues nearly $400,000,000 from the estimates of a year ago.

«Relief» Bills Total More Than $4,500,000,000

Washington — President Hoover stated today that compilations which he has made show the so-called "relief" bills so far introduced in congress amount to more than $4,500,000,000, over the amount that he recommended. He said the amount he recommended is all that can be appropriated without raising taxes.

A tax increase, according to the President, would defeat the very purpose of the relief, and prosperity cannot be restored by treasury raids.

Secretary Mellon last week also pointed to the danger of inflated taxes if congress runs "wild" on relief appropriations. Among the score of bills submitted is one providing $50,000,000 for a "destitution fund."

Col. Arthur Woods states he has not been able to check up on the estimate of unemployed made by the American Federation of Labor as being 4,800,000, but that the estimate made by the department of commerce of 3,400,000 still stands.

Steel Barrel Output Off

October production of all types of steel barrels was at a daily average of 40,400 units, by report of members to the Steel Barrel Manufacturers' association, Cleveland. Total percentage for all barrels used during the month was 43.11. Total bar-

rels shipped during October was 398,885, compared with September's 359,308 units, and a daily average production for the latter month of 45,500.

Soft Coal Total Holds

Total production of soft coal during the week ended Nov. 29 is estimated at 8,690,000 net tons. This week included a holiday, yet was only 2 per cent below revised production aggregate for the prior week of 8,890,000 net tons. To date, 1930 totals 421,898,000 net tons, in comparison with 1929's 486,038,000 net tons.

Foundry Output Gaining

Eleven foundries of the Worcester, Mass., foundry council produced 2,299,494 pounds of castings in October, the largest total since June. This contrasts with 4,456,646 pounds in October, 1929, according to the following monthly figures:

1929	
October	4,456,646
(10 mos.)	47,040,059
November	4,108,685
December	2,819,796
Total, 1929	53,968,540
1930	
January	2,862,705
February	2,786,850
March	3,160,872
April	3,337,292
June	2,675,042
July	2,068,084
August	1,879,655
September	2,117,590
October	2,299,494
(10 mos.)	26,447,279

Electric Trucks Show Turn

October shipments of electrical industrial trucks and tractors, as reported to the bureau of the census by the ten leading manufacturers, consisted of 93 vehicles, as compared with 81 in September. Ten-month decline of 1930 compared to 1929 is largely confined to domestic shipments, as the following monthly table reveals:

		Shipments	
1929	Total	Domestic	Export
October	167	134	33
(10 mos.)	1,750	1,625	125
November	118	110	8
December	151	124	27
Total (year)	2,019	1,859	160
1930			
January	140	123	17
February	113	106	7
March	123	109	14
April	106	101	5
May	144	125	19
June	95	63	32
July	108	99	9
August	92	81	11
September	81	75	6
October	93	90	3
(10 mos.)	1,095	972	123

November Ingot Output Below 45 Per Cent of Capacity

DECLINING below 50 per cent of capacity, steel ingot production as reported by the American Iron and Steel institute reached 44.64 per cent in November. This yielded an average daily output of 89,379 tons, which is the lowest month since July, 1924, and the lowest November since 1921. The decline from February has been practically unbroken.

The November average daily output of 89,379 tons compares with 100,756 tons for October of this year and 135,430 tons for November, 1929. Per cent of operation at 44.64 compares with 50.32 for October, 1930, and 69.06 for November, 1929. It is much below the average of 65.97 for the eleven months of 1930. Going back to other low production months the average daily output in July, 1924, was 72,223 tons and for November, 1921, it was 72,900 tons.

Calculated monthly output for 25 working days in November, 1930, was 2,234,482 tons; in October for 27 working days it was 2,720,414 tons; in November, 1929, for 26 days it was 3,521,111.

Bessemer and open-hearth production lost about proportionately in November, the former declining from 399,704 tons in October to 300,337 tons in November. Open-hearth tonnage dropped from 2,164,830 tons in October to 1,806,109 in November.

For 11 months in 1930 total calculated production is 37,644,765 tons, compared with 51,409,267 tons, average rate of operation for 1930 being 65.97 per cent and for eleven months of 1929 it was 91.66 per cent.

Should December production equal that of November the total for 1930 would be 39,879,247 tons, which compares with 54,313,845 tons in 1929, and is 73.5 per cent of the latter year's record output.

Steel Ingot Production—1929-30

94.27 Per Cent of Industry Reporting

Gross Tons

1929	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	Number of working days	Approximate daily output all companies	Per cent of operation
Jan.	3,692,062	549,616	4,241,678	4,500,209	27	166,674	84.99
Feb.	3,590,826	489,279	4,080,105	4,328,789	24	180,366	91.97
Mar.	4,180,408	596,691	4,777,099	5,068,265	26	194,933	99.40
Apr.	4,025,409	640,351	4,665,760	4,950,139	26	190,390	97.08
May	4,275,161	707,484	4,982,645	5,286,339	27	195,790	99.84
June	3,999,363	622,585	4,621,948	4,903,657	25	196,146	100.02
July	3,922,053	649,950	4,572,003	4,850,668	26	186,564	95.13
Aug.	3,987,400	668,023	4,655,423	4,939,172	27	182,932	93.28
Sept.	3,624,954	642,886	4,267,840	4,527,966	25	181,119	92.35
Oct.	3,631,674	642,235	4,273,909	4,534,326	27	167,938	85.64
Nov.	2,796,214	522,672	3,318,886	3,521,173	26	135,430	69.06
11 mos.	41,725,524	6,731,191	48,456,715	51,409,267	286	179,753	91.66
Dec.	2,375,797	360,489	2,736,286	2,903,063	25	116,123	59.21
Total	44,101,321	7,092,261	51,193,582	54,313,845	311	174,643	89.05
1930							
Jan.	3,137,002	441,572	3,578,574	3,796,090	27	140,596	70.22
Feb.	3,336,021	508,618	3,844,639	4,078,327	24	169,930	84.88
Mar.	3,513,904	539,616	4,053,520	4,299,905	26	165,381	82.60
Apr.	3,406,610	509,234	3,915,844	4,153,860	26	159,764	79.80
May	3,265,190	528,968	3,794,158	4,024,778	27	149,066	74.45
June	2,835,527	407,586	3,243,113	3,440,239	25	137,610	68.73
July	2,411,592	353,723	2,765,315	2,933,399	26	112,823	56.35
Aug.	2,543,466	374,467	2,917,933	3,095,293	26	119,050	59.46
Sept.	2,273,668	429,975	2,703,643	2,867,978	26	110,307	55.10
Oct.	2,164,830	399,704	2,564,534	2,720,414	27	100,756	50.32
Nov.	1,806,109	300,337	2,106,446	2,234,482	25	89,379	44.64
11 mos.	30,693,919	4,793,800	35,487,719	37,644,765	285	132,087	65.97

Figures exclude crucible and electric ingots. Operating percentages for 1929 are based on capacity of 60,990,810 gross tons as of Dec. 31, 1928; for 1930 on capacity of 62,265,670 tons as of Dec. 31, 1929.

Industrial Men in the Day's News

Ralph H. Sweetser, Consulting Engineer in Pig Iron, Coal and Coke Problems

THIRTY-EIGHT years' practical experience in blast furnace operation equip him well to solve problems as consultant engineer.

MARYLAND Steel, Joseph E. Thropp, Salem Iron, Cranberry Furnace, Algoma Steel, Columbus Iron & Steel, Thomas Iron, and American Rolling Mill are some of his past affiliations.

CLEAN coal for metallurgical purposes has long been a hobby with him and in this connection he is affiliated with Stuart, James & Cooke Inc.

AFTER ten years in the executive division at Columbus, O., of American Rolling Mill Co., Middletown, O., as assistant to first vice president, and to J. H. Frantz, vice chairman, Ralph H. Sweetser has established a consulting service in blast furnace practice at 2165 Parsons avenue, Columbus, and 17 Battery place, New York. He will deal primarily with problems of raw materials entering into the production of pig iron and coke and their use. In connection with problems of mining and preparation of metallurgical coals, Mr. Sweetser also is associated with Stuart, James & Cooke Inc., 17 Battery Place, New York, which likewise maintains offices in London, Moscow and Kharkov, Russia, and has associates representing it in Paris, Berlin and Warsaw.

Mr. Sweetser has a background of more than 38 years in iron and steel. He was born in Portsmouth, N. H., March 7, 1871. He was graduated from Massachusetts Institute of Technology in 1892 with an S. B. degree in mining engineering and metallurgy. His first experience in blast furnace operation was with Maryland Steel Co., Sparrows Point, Md., where in July, 1892, he became affiliated with what was known as "the monkey-wrench gang." He then became stove-tender, furnace foreman, chemist and finally assistant superintendent. In 1897 he was appointed superintendent of Earlston furnace, owned by Joseph E. Thropp, Everett, Pa. In 1899 and until 1902 he was assistant to the president of Salem Iron Co., Leetonia, O.; 1902-4, manager of Cranberry Furnace Co., Johnson City, Tenn.; 1904-1907, superintendent of blast furnace department and docks, Algoma Steel Corp., Sault Ste. Marie, Ont., operating the largest charcoal blast furnaces in the world; 1907-1913, superintendent, Columbus Iron & Steel Co., Columbus, O.; 1913-1916, president and general manager, Thomas Iron Co., Easton, Pa., and president of Ironton Railroad Co.; 1916-17, consulting metallurgist; 1917-1920, works manager American Rolling Mill Co., Columbus; 1920-1930, assistant to first vice president, American Rolling Mill Co. Since 1921 and until January, 1930, he also was vice president of Portsmouth By-Product Coke Co., Portsmouth, O.

As a member of American Institute of Mining and Metallurgical Engineers, Mr. Sweetser always has taken an active part in its gatherings. He was its vice president and director for three years and the first chairman of the iron and steel division, the outcome three years ago of its old iron and steel committee. He is a member of the American Iron and Steel institute and was president of the Southern Ohio Pig Iron and Coke association for several years. He has published numerous papers on blast furnace practice and in recent years has become especially active in campaigns for clean coal for metallurgical fuels. He was co-author with S. P. Kinney of a paper on "Modern Blast-Furnace Theory and Practice" presented at the October, 1929, meeting of the World Engineering congress held that year in Tokio, Japan.

LOUIS E. CREIGHTON, identified with Union Drawn Steel Co., Beaver Falls, Pa., for the past 20 years, serving as vice president in charge of operations since 1927, has been appointed vice president and general manager of the Union Drawn Steel Co., subsidiary of Republic Steel Corp., Youngstown, O.

Mr. Creighton was born at New Brighton, Pa., Nov. 6, 1888. He studied production engineering at night and during spare moments and obtained his first employment with the Kennedy Keg Co., New Brighton. After leaving school he entered the employ of Standard Sanitary Mfg. Co., New Brighton, learning the machinists' trade. After service with the Pennsylvania and Pittsburgh & Lake Erie railroads, he became assistant to traffic manager, Union Drawn Steel Co., July 6, 1910. By

1912 he was advanced to manager of order and invoice departments as well as local sales. Jan. 1, 1917, he was made production manager, remaining until August, 1925, when the company merged with Peerless Drawn Steel Co., Massillon, O., Standard Gauge Steel Co., Beaver Falls, and Frasse Steel Works, Hartford, Conn., when he became assistant to the president. He held this position until Feb. 15, 1926, then being appointed operating manager, and in May, 1927, he was further promoted to vice president in charge of operations.

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J. S. Ervin, vice president and for the past six years manager of sales, H. H. Robertson Co., Pittsburgh, has resigned to make an affiliation with a

Louis E. Creighton

leading steel company. He continues as director of the Robertson company. Upon his return from a vacation at sea, definite announcement will be made as to Mr. Ervin's new connection.

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H. E. Jacobson has become Chicago district representative for the heating division of the Wickes Boiler Co., Saginaw, Mich., with headquarters at 205 West Wacker drive, Chicago.

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L. H. Van Dicke, assistant purchasing agent for several years for John A. Roebling's Sons Co., Trenton, N. J., has been appointed purchasing agent to succeed the late Joseph W. Gaskill, whose death was noted in STEEL of Nov. 13.

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A. M. Cullum, Tulsa, Okla., formerly oil country sales manager, Reading Iron Co., Reading, Pa., states that contrary to reports he was to become affiliated with Harbison-Walker Refractories Co., Pittsburgh, he has made no definite plans for the future.

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H. F. Quinlan, formerly purchasing agent for Chestnut & Smith Corp., Tulsa, Okla., natural gasoline manufacturers, has opened an office at 617 Oklahoma Natural Gas building, Tulsa, to deal in used power plant equipment, specializing in gasoline plant machinery.

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J. Q. H. Smith has been elected executive vice president of the Wrought Iron Co. of America, with offices in the Commercial Trust building, Fifteenth and Market streets, Philadelphia. Mr. Smith formerly was president of the Virginia Iron Works Corp., Norfolk, Va.

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W. G. Fitzpatrick with headquarters at Dallas, Tex., has been made sales manager, derrick division, Emsco Derrick & Equipment Co., Los Angeles.

George W. Walton has been appointed sales manager, machinery division, with headquarters at Tulsa, Okla.

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E. E. Tyer, formerly in charge of the Gulf Coast division, Oil Well Supply Co., Pittsburgh, has been appointed manager, midwest tubular goods division, comprising South Texas, Louisiana and Arkansas, with headquarters at Houston, Tex. He will have charge of National Tube Co. sales in that territory.

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H. W. Fitzgerald, G. W. Lange, H. T. Smith and H. L. Zimmerman expect to sail Dec. 16 for Soviet Russia to join the organization of engineers which Freyn Engineering Co., Chicago, is maintaining at Kuznetsk, Siberia, to design and build a steel plant of 1,500,000 tons annual capacity.

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H. Gardner Jackson, formerly president of Wire Wheel Corp. of America, Buffalo, and later vice president, Kelsey-Hayes Wheel Corp., Detroit, when the latter absorbed the Buffalo company, has resigned as vice president in charge of the Buffalo plant. He continues as a director.

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Robert C. Sessions has become affiliated with Frank L. Sessions, consulting engineer, with headquarters in the Rockefeller building, Cleveland. Until recently Robert C. Sessions was engineer in charge of the engineering and experimental division of Steel & Tubes Inc., Cleveland. They will practice consulting mechanical and electrical engineering.

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S. Livingston Mather, of the Cleveland Cliffs Iron Co., Cleveland, was elected president of the American Mining Congress, Washington, and a member of the executive committee, at the recent meeting in Washington.

J. B. Putnam, of Pickands, Mather & Co., Cleveland, and Erskine Ramsay, of the Alabama By-Products Co., Birmingham, Ala., were elected directors for three years.

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William H. Basse, district sales manager at Detroit for Joseph T. Ryerson & Son Inc., Chicago, completed his 30th year with the Ryerson organization Nov. 19, receiving felicitations from many friends and being entertained at dinner at the Detroit Athletic club by his Detroit associates, who presented him with a golf bag and clubs.

Mr. Basse, a graduate of Lewis institute, Chicago, in 1900, entered the

William H. Basse

employ of the Ryerson organization in Chicago on Nov. 19 of that year as an office boy. The next two years were spent in general office work. The following three years he was in the office sales department, during the last year being sent out on general inquiries.

In 1905 he was assigned by the Ryerson organization to Iowa, Nebraska, South Dakota, northern Missouri and southern Minnesota. In 1918 he returned to the Chicago office as assistant general manager of sales, and in July of that year was appointed manager at Detroit, a post he has since held.

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Charles T. Ray was elected president of B. F. Avery & Sons, Louisville, Ky., manufacturers of agricultural implements, to fill the vacancy caused by the death of William Black, April 19. Other officers re-elected are C. F. Huhlein, chairman, Donald McDonald Jr., vice president, and T. C. Humphries, secretary-treasurer. Mr. Ray

formerly was vice president and director in charge of manufacturing and has been with the company for 32 years.

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George S. Heffrin has resigned, effective Jan. 1, as blast furnace superintendent, Corrigan, McKinney Steel Co., Cleveland, and will be succeeded by G. O. Hollanbaugh, who has been his assistant.

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F. D. Newbury, formerly manager of power engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed general manager of machinery engineering. He has been succeeded by R. A. McCarty as manager of power engineering. Mr. McCarty had been division engineer in that department.

Mr. Newbury has been with the engineering department since 1903 when he was placed in charge of the design of armature winding molds. In 1910 he was made assistant division engineer of the power division and one year later became engineer of that division. In 1920 he became manager of power engineering.

Eastern Steel Co. Group Asks for Order of Sale

Philadelphia—Bondholders committee of the Eastern Steel Co., Pottsville, Pa., being operated by a receiver, E. L. Herndon, is preparing a petition to the court asking for an order of sale. It will be necessary to sell the property in order that the title may pass to a new purchaser, whether it be as a consequence of a reorganization or as the first step to dismantling.

Efforts of certain interests for reorganization, through the purchase of the present bonds and the underwriting and sale of a new issue, seem now to be nearer a successful termination. The Eastern Steel Co. finishing mills are being operated continuously. The open-hearth department, having a considerably larger capacity than necessary for the mills, has been operating intermittently.

Obituaries

WALTER R. GRAVENER, 59, southeastern sales manager since November, 1929, for American Steel Foundries, Chicago, died Nov. 21. He was born in Ludlow, Ky., in 1872. In 1900 he became identified with railway supplies, being employed by American Steel Castings Co. at New York. When American Steel Foundries was formed, about 1903, Mr. Gravener continued as salesman in the New York office. He moved to Washington in 1905 as sales agent for southeastern territory. In November, 1929, he was made southeastern sales manager.

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Frederick A. Hannah, 55 consulting engineer, died Dec. 4 at New York. He recently returned from Russia where he was engaged in engineering work for the soviet.

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J. Gilbert McDonough, 54, for many years associated with McDonough Mfg. Co., Eau Claire, Wis., died Dec. 3. Mr. McDonough invented an internal grinder for metalworking as well as other machinery.

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Harry W. Workman, 46, president and manager of Lima Metals Foundry Co., Lima, O., died Dec. 2. He located in Lima in 1914 following his graduation from University of Michigan.

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Nathan W. Perkins, 70, mechanical engineer, for many years with the Ellis Adding Machine Co., Newark, N. J., died Dec. 1 at his home, East Orange, N. J. Mr. Perkins was at one time with the National Cash Register Co., Dayton, O.

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J. Edward Bulger, former general superintendent of Superior Steel Corp., Pittsburgh, died Dec. 4. He joined the Superior company in 1892 as superintendent at Carnegie, Pa., and later was made general superintendent, which position he held until his retirement in 1924.

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Junius T. Bliss, organizer and owner of Sheet Metal Publication Co., 154 Nassau street, New York, for the past 20 years, died Dec. 1 at his Stamford, Conn., home. His company published text books treating of the sheet metal industry. Mr. Bliss was born at Wooster, O., but lived in Brooklyn, N. Y., for many years.

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Samuel F. Long, 57, for the past ten years affiliated with the National Roll & Foundry Co., Avonmore, Pa., died in Pittsburgh Dec. 4. Mr. Long af one time was associated with Julian Kennedy, steel plant engineer in Pittsburgh, and later was connected with the Mesta Machine Co. In 1912 he became president of the Ironclad Mfg. Co., Canton, O., and eight years later joined the sales department of the National Roll & Foundry Co., headquarters, Canton.

National's Purchase Plan Given; Announce Dividends

National Steel Corp., Pittsburgh, which is taking over Michigan Steel Corp., Detroit, has offered to the Michigan stockholders purchase of their stock on the basis of $50 a share. Of this amount $12.50 is to be in cash, $12.50 in National Steel common, and $25 in notes, bonds or debentures as issued by National Steel Corp.

At present, National Steel Corp. has no bonded indebtedness nor preferred issues. Of 3,000,000 common shares authorized, 2,072,000 shares have been issued.

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American Car & Foundry Co., New York, reports net income of $1,859,761 for six months ended Oct. 31, equal after preferred dividends to $1.35 a share on common stock. This compares with $2,488,652, or $2.40 a share last year.

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Chicago Rivet & Machine Co., Chicago, has declared an extra common dividend of 50 cents a share, payable Dec. 15 to record Dec. 1.

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Foster-Wheeler Corp., New York, has declared regular quarterly dividend of 50 cents a common share, payable Jan. 2 to record Dec. 13.

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Eastern Rolling Mill Co., Baltimore, has omitted the quarterly common dividend due at this time of 37½ cents a share.

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F. W. Myers & Bros. Co., Ashland, O., reports net earnings of $1,083,468 for year ended Oct. 31, equivalent to $4.96 a share. Earnings compare with $1,274,561, or $5.62 a share in 1929.

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Clark Equipment Co., Buchanan, Mich., directors have declared quarterly dividend of 50 cents a common share, payable Dec. 15 to record Nov. 28. Previously quarterly dividends of 75 cents a share were paid.

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Holland Furnace Co., Holland, Mich., directors have declared an extra dividend of 25 cents a share and the regular dividend of 62½ cents on the common stock, both payable Jan. 2 to record Dec. 15.

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Federal Screw Works Corp., Detroit, directors have declared a dividend of 25 cents, payable Jan. 2 to record Dec. 15. Previously the stock was receiving 75 cents quarterly. Corporation reports net loss for third quarter of $49,862, compared with net earnings of $235,344 in like quarter of 1929. Nine months: 1930, net profit of $240,480; 1929, net profit of $775,859.

Here and There in Industry

LURIA BROS. & CO. INC., Reading, Pa., will open a modernly-equipped iron and steel scrap yard in the new steel industrial district of Ecorse, Mich., just south of Detroit, about Dec. 15. It has acquired a 4-acre site, with a Detroit, Toledo & Ironton railroad connection. C. H. R. MacKenzie is manager for Luria Bros & Co., Detroit, with offices in the Book tower. Luria Bros. & Co., established in 1889, have home offices at Reading, yards and offices at Reading, Lebanon, Pa., Coatesville, Pa., Donaghmore, Pa., Pittsburgh and Detroit, and offices at Boston, New York and Philadelphia.

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Canton Tin Plate Corp., Canton, O., has opened offices in Detroit at 3-259 General Motors building, in charge of Harold Davey, sales agent.

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William M. Bailey Co., Pittsburgh, has released manufacturing and sales rights of the American electric rotary clay gun to William Johnson Jr., Pittsburgh.

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Oshkosh Motor Truck Inc., Oshkosh, Wis., has been formed to take over from receivers the property of the Oshkosh Motor Truck Mfg. Co. and continue manufacture of four-wheel drive commercial vehicles.

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Packard Cable Co. of Canada Ltd., a branch of the Packard Electric Co., Warren, O., has opened a plant at 283 King street East, Toronto, Ont., for the manufacture of ignition sets, battery cables and other accessories.

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Stronach Nail Co., Pittsburgh, through its president, E. S. Eggers, has filed a bankruptcy petition in federal court. Liabilities of the company are listed as $337,364, and assets $692,986. The company has a nail capacity of 300,000 kegs per year.

□ □ □

New Jersey Wire Cloth Co., Trenton, N. J., a subsidiary of the John A. Roebling's Sons Co., Trenton, will end its corporate existence Jan. 1, 1931, and its business will be taken over by the parent company. The personnel of the company will not be changed.

□ □ □

Angers Machine Co., South Milwaukee, Wis., which has been specializing in automotive parts and equipment, is establishing a galvanized products department to manufacture transmission line towers and do a general galvanizing business.

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J. B. Downey, 2944 North Second street, Phoenix, Ariz., has been appointed district sales representative for Arizona for Dayton-Dowd Co., Quincy, Ill., manufacturer of centrifugal pumps, etc.

□ □ □

Stanley Works, New Britain, Conn., has begun production on a tonnage scale of cold-rolled stainless strip steel, pattern steel, which is cold-rolled with basket weave, hammered and various other patterns, and copper-coated strip steel.

□ □ □

Fletcher Equipment Co., New Orleans, has been organized with Harry W. Fletcher, president, and has acquired the distributing agency for the equipment manufacturers which Mr. Fletcher formerly represented. The same lines of building and industrial equipment will be handled.

□ □ □

Arthur G. McKee & Co., Cleveland, has made an arrangement with the Whessoe Foundry & Engineering Co. Ltd., Darlington, Eng., under which the latter will become exclusive manufacturing agent for Great Britain for McKee oil refinery and blast furnace equipment. This covers England, Scotland, Wales and Ireland.

□ □ □

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is planning concentration of its electric and oil-electric locomotive equipping and testing at its works at South Philadelphia, Pa. A new shop for this purpose will be arranged in present manufacturing space. Close association with Baldwin Locomotive Works in production of electric locomotives makes this location advantageous for both.

□ □ □

F. Rassmann Mfg. Co., Beaver Dam, Wis., which recently sustained loss by fire in its foundry, has started reconstruction, 42 x 146 feet. Steel trusses and columns and steel sash will be used throughout. The cupola will be moved from the main foundry into a detached building of fireproof construction. The work is expected to be completed by Dec. 22.

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Columbia Steel Tank Co., Kansas City, Mo., has devised a small floating deck designed for minimizing evaporation losses and fire hazards in vertical gasoline storage tanks under 20 feet in diameter. It is an airtight float eight inches high which rides on the surface of the liquid, with tight fitting strips of asbestos fibre forming close contact with the tank shell, making an almost airtight seal.

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Surface Combustion Co., New York, has acquired the gas equipment division of the Columbus Heating & Ventilating Co., Columbus, O., manufacturer of warm air furnaces.

This acquisition follows the recent purchase of the Chapman-Stein Furnace Co., Mt. Vernon, O., and carries further the expansion program leading to complete coverage of the manufacture of gas heating and cooling equipment for industrial and domestic purposes.

□ □ □

Fuller-Lehigh Co., Allentown, Pa., a subsidiary of the Babcock & Wilcox Co., Barberton, O., will be removed from Allentown to Barberton about Feb. 1. An addition of about 40,000 square feet will be provided to accommodate the enlarged operations. The Babcock & Wilcox Co. manufactures boilers, stokers and similar equipment. About six years ago it bought the Fuller-Lehigh Co., which manufactures equipment for pulverizing coal for fuel and appliances for combustion of the powdered coal.

□ □ □

Thompson Products Inc., Cleveland, has booked orders from the Opel Motor Works of Germany for 5000 eccentric tie rods and 5000 drag links, according to Charles E. Thompson, president. Shipment will start immediately from the Detroit plant of the Thompson company, to be used in January production of a six cylinder car. This is the initial release on the 1931 Opel manufacturing program and the first German adoption of the Thompson eccentric tie rod, used by 108 American car, truck and tractor builders, and certain French and English automobile makers.

Senators Protest Against Increase in Steel Prices

Washington—Senators Norris of Nebraska, Walsh of Massachusetts, and King of Utah, last week condemned the $1 advance in the price of steel. Senator Norris referred to the fact the government is speeding up its building program.

"In the government program of building operations alone there will be many million dollars from the federal treasury expended for various kinds of steel products," he said. "I hope the department of justice will take notice of it."

No resolution, however, was offered regarding investigation by the department.

MIRRORS of MOTORDOM

DETROIT

CHEVROLET, Oldsmobile, Willys, Oakland-Pontiac and Hudson-Essex, swinging with vigor into the production of new models, seem likely to offset the shutdowns by Ford and Buick and progressive diminution of operations by other makers and hold December automobile activity at practically the November rate.

Specifications, especially from Chevrolet, are permeating much of the steel and parts industries and impart a confidence that, while year-end shutdowns will depress production to the lowest point of 1930, the industry can look to January for constructive developments. Only once has a January failed to better the preceding December, and it is deep-seated as dogma in Detroit that 1931 will be a better automobile year than 1930.

The industry has ridden the production merry-go-round a full year—the most trying year since it attained maturity—and is back where it started. From last December, when output slumped to 120,007 units, there was an acceleration to 443,038 in April, then a gentle slide to an estimated 125,000 to 145,000 units for November. December will not show much change.

But important gains in morale are being consolidated. The industry has 14 months of low production behind it, its show window has never displayed more attractive models priced so low, the January shows will focus public gaze upon them. Detroit will not be disappointed if the comeback in the first half of 1931 is slow, but it is certain the trend is in the right direction.

Chevrolet Sets Record

Chevrolet is aggressive to a degree reminiscent of the days when Ford's Model T was breathing its last. Not attaining real speed on its 1931 line until the middle of November, Chevrolet last month turned out 47,250 units, a new November record.

For December it had originally scheduled about 50,000 units, but it has expanded specifications for many important materials and parts 35 per cent and its published schedule now is 61,000. The preliminary estimate for January is 71,000 units and for February 75,000.

Beyond the middle of December, however, Chevrolet production appears to be somewhat speculative, dependent more upon an inflow of retail orders than upon the stock requirements of its dealers. It is proceeding, however, upon the theory that a bold front and an assumption of confidence will start the snowball rolling.

Less Glamor to Model A

Chevrolet, it will be recalled, made its greatest strides in 1927 and 1928, sweeping the low-price market at a time when Ford's Model T was passing out of the picture and Model A was in preparation.

In 1929 and early in 1930 Ford took most of the bows. Now there are evidences that Model A is regarded more as a Ford than as an automobile prodigy—the inescapable fate of all new models—and Chevrolet, with great emphasis upon its six cylinder motor, is pushing for attention.

Ford domestic production of cars and trucks in November was about 52,000, or about 5000 greater than Chevrolet. In December, Chevrolet's schedule is 61,000, while Ford may not make more than 27,000.

An occasional rumor that Chevrolet contemplates a four-cylinder car as a running mate to its six is not credited.

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Like the ancient worthy who came to scoff and remained to pray, Detroit now generally accepts the report, first published in this department Oct. 30, that the development of a light eight by Ford has passed the experimental stage.

The veil remains closely drawn over Ford plans for 1931, but the program apparently includes two certainties, one probability and one possibility.

Model A undoubtedly will be continued as four cylinder job, with some mechanical and body changes but without radical revision. The fact is, Model A is continuously in process of revision, many thousands of changes having been made since early 1928.

Lincoln continues as an eight—many expected a sixteen—but with a noteworthy increase in power to about 200 horsepower and a top speed of about 120 miles per hour.

The probability is a light Ford eight, with chances favoring the V-type, selling below $1000. One report goes so far as to put the price at $720, but it is not believed costs have been determined to this extent.

The possibility is a small Lincoln, priced between $1000 and $2000, also of the V-type.

There are some who believe the rumors of a light Ford eight and a small Lincoln eight arise from the same experimental work, but whether the new job is called a Lincoln or a Ford, the chances today favor a light eight under $1000.

Ford 8 at Separate Plant

Unless Ford radically reverses himself, he will not assemble the new eight at Fordson, although the manufacture of some parts there is possible. One thing at one time in one plant has been Henry Ford's creed, and it is not likely to be altered by so radical departure as a second car in his line.

The now largely unused Highland

Park plant, cradle of all Ford operations, could be adapted to the new job.

Many reports also locate production in the Lincoln plant, by no means wholly occupied at this time. This may account for some confusion whether the new eight may be a small Lincoln.

In any event, it is not known that any serious retooling necessary for large-scale production of a small eight has been undertaken, and a large potential market thus is before machine tool manufacturers.

Expect New Ford in 1931

Substantiating reports in this department, Cram's Automotive Reports, of Detroit, say in a special bulletin that the time element is the main topic in Detroit relative to the reported Ford eight. Cram's says:

"Some, closely connected with the industry, are of the opinion that Mr. Ford may possibly defer action from a manufacturing standpoint for some time, while others (in the majority) still maintain the spring or early summer of the coming year will witness this move on the part of the Ford Motor Co.

"In view of the reported progress to date, it would not be out of reason to expect some definite action during the coming year, although, of course, many a product or development has reached the production stage only to be temporarily or permanently shelved for some reason or other.

"While these comments may appear indefinite, they are the summarization of the various facts and rumors which have come to us. In our own opinion, we feel that the situation with respect to this particular car will assume a much more tangible and definite shape shortly since it seems inevitable to us that the Ford Motor Co. will take cognizance of the unrest existing to a considerable degree within its dealer body and attempt to forestall increasing dissatisfaction with some of its present methods and policies by offering the dealers an additional line of merchandise to handle."

Ford Shutdown Is Near

Ford production, still on a three-day week basis, has declined to almost 3000 daily. Certainly by Dec. 18, if not by the end of this week, operations at Fordson will go down for the remainder of the year.

The maximum Ford output in December thus may be 27,000 units. There has been a rigid scaling-down of production to demand in recent weeks, both in anticipation of some changes in the line as of the new year and a possible reduction in price to restore a balance upset when Chevrolet cut prices on its 1931 line.

Ford steelmaking operations are on a much better basis than the assembly line, and so far as the range of quality and size permits, Ford is supplying his parts makers with their steel. Some time in 1931 it is expected that Ford will draw his own wire at Fordson, necessitating a revision of his semi-finishing procedure.

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While Buick had a good run in the fall on its new eights, the honeymoon is over. From 11,100 in October, production shrank to 7100 in November, with about 4000 to be assembled by Dec. 12, when the plant at Flint goes down until Jan. 5, or 12.

Willys, scheduling 5000 units for December and operating 4 days a week in many departments, will have a new six and a new eight at the January shows. There will be drastic reductions in price, too. On the 1930 chassis of the larger Willys will be mounted a slightly smaller engine with a cut of upward of $500 in the list price.

The fact that Olds has reserved space at the New York and Chicago shows for its Viking V-eight conflicts with the general understanding in Detroit that the Viking has been dropped. It is, however, expected that an eight will be brought out in the Oldsmobile line, to be priced slightly above the present Oldsmobile base, and this new eight may slip into Viking's place. Olds is reported assembling about 100 a day, 4 days a week, at Lansing, after being down three weeks in November.

New 8 for Chrysler

Chrysler is expected to drop a new straight eight, priced at about $1000, into its line, supplementing the low-priced six and the medium and high-priced eights. A new Dodge eight also is in the offing, with probabilities the Dodge six will be continued with some changes. A big production push on the DeSoto six and eight is contemplated for 1931.

Chrysler is now assembling about 450 units daily, 3 days a week; DeSoto at 450 units, 4 days; and Plymouth 350 units, 3 days. Dodge is producing about 600 passenger cars, 3 days a week, and 600 trucks, 5 days a week.

Oakland-Pontiac, which was down all of November, has scheduled 10,000 Pontiacs and 5000 Oaklands this month, these to be revised models for January showing.

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Hudson-Essex will assemble between 8000 and 10,000 units this month, the reception of its new lines by dealers warranting the rehiring of a generous proportion of its former force. New impetus is expected from the advent of a former Studebaker official, and further announcement of switches from South Bend to the Hudson-Essex organization is expected. Both the new Hudson and Essex bodies represent a wide extension of welding.

Lincoln, pushing work on its new free-wheeling model, is operating 5 days a week, 120 units a day. Packard drags at 100 units, 4½ days. Reo is down to 80 a day, 3 days; Graham 70 a day, 4 days; and Hupp 150 a day, 3 days.

News that Martin Motors Inc., Washington, will manufacture a small automobile, with wheel base of 72 inches, in the M. P. Moller Motor Co. plant at Hagerstown, Md., causes no excitement in Detroit, which refuses to regard the small automobile as a lasting competitor.

For a number of weeks the Austin, made at Butler, Pa., has been virtually out of production. Durant now announces it will begin production in January on the Mathis, a bantam of French origin, which is to be shown at the January shows.

General Motors, through its Opel subsidiary, is putting a small 6-cylinder car on the market in Germany. This car was tested in the United States, and presumably puts General Motors in touch with costs and market possibilities.

Count on Mob Psychology

Detroit is of two minds concerning the comeback in automobile buying.

One thought is that once labor is re-employed it will remember its chastening, pay off its debts and build up a reserve before making fresh commitments.

The other view—and the more widely held—is that as soon as labor feels secure about its new connections it will rush to automobile sales rooms. Labor will not be re-employed simultaneously in all parts of the country, and more stringent credit will serve as a brake, but mob psychology is counted on to provide considerable impetus.

But whatever the motive, Detroit is certain 1931 will be a better year than 1930. The start will be lower than a year ago, but the curve should rise gradually, reversing the trend of 1930.

Canada Not Dumping Iron

Washington—The pig iron dumping order from Canada has been revoked by the treasury department.

"As the result of a recent investigation," says an order signed by Secretary Mellon, "it now appears that there is no dumping of pig iron from the Province of Ontario, Canada. Customs officers are hereby instructed to take no action under the said finding of dumping in the case of pig iron from Ontario, Canada, exported to the United States on and after the date hereof. Collectors shall, however, report in the usual manner in the event suspicion of dumping of this commodity from Ontario develops in the future."

EDITORIAL

Norris Would Kill Goose That Lays Eggs of Prosperity

LAST week two members of the United States senate got their names in the newspapers by denouncing the steel industry because several companies had announced a dollar-a-ton advance on orders for first-quarter steel.

Senators George W. Norris of Nebraska and David I. Walsh of Massachusetts led the attack. Among the statements credited to Senator Norris are the following:

> "We are now met by a combination of steel companies who say they are going to join the great patriotic effort to relieve unemployment by increasing prices.
>
> "The steel corporations wrap the flap about themselves and shout from the housetops that they are going to advance prices."

It is not always easy to fathom the exact meaning of senatorial outbursts of this kind. However, it is well to remember that the two senators labor under the impression—doubtless sincere—that they are champions of the American public and that their immediate task in the senate is to further the "great patriotic effort to relieve unemployment." In the case of the senator from Nebraska it is easy to believe that he honestly believes that the announced increase in steel prices is inimical to relief of unemployment.

Upturn After Long Decline in Prices Is Hopeful Sign of Recovery

But if the senator were familiar with the history of the steel industry he would know that an upturn in prices after a long decline is to be welcomed instead of condemned. He would know that in a depression buying does not expand until prices touch bottom and begin to rise. If the senator cares to demonstrate this fact to his own satisfaction he may examine the long decline of prices from the spring of 1920 to a low point in February, 1922. Except for seasonal fluctuations steel production declined during this period, but in March, 1922, when prices turned upward, steel ingot output responded promptly and rose sharply.

The same relation between prices and demand has held at the end of every decline in steel. Makers and users of steel know, if Senator Norris does not, that a firming of steel prices at the end of a long depression is a necessary concomitant of the approaching return of prosperity. As a professed guardian of the interests of the American public, the senator from the state of the corn huskers—far from condemning the rise in steel prices—should hail it as a sign that better times are coming.

As a matter of cold fact, the improvement in operations of the steel industry that will follow a definite, positive upturn in steel quotations will do more toward relieving unemployment than can be done by Senators Norris and Walsh and all of their colleagues in the halls of congress. When steel flows from the mills in abundance, it means that the pulse of a quarter of all American industry is beneficently stimulated.

Steel Prices Are Lower, Relatively, Than Cost of Living

Perhaps the senator from Nebraska, being unfamiliar with steel prices, thinks they are too high. If he were to examine the facts, he would find that quotations are at the lowest point in many years and that a comparison of the index of steel prices with that of the cost of living shows that for several years the cost of steel has been lower relatively than the average of the items that enter into the cost of living.

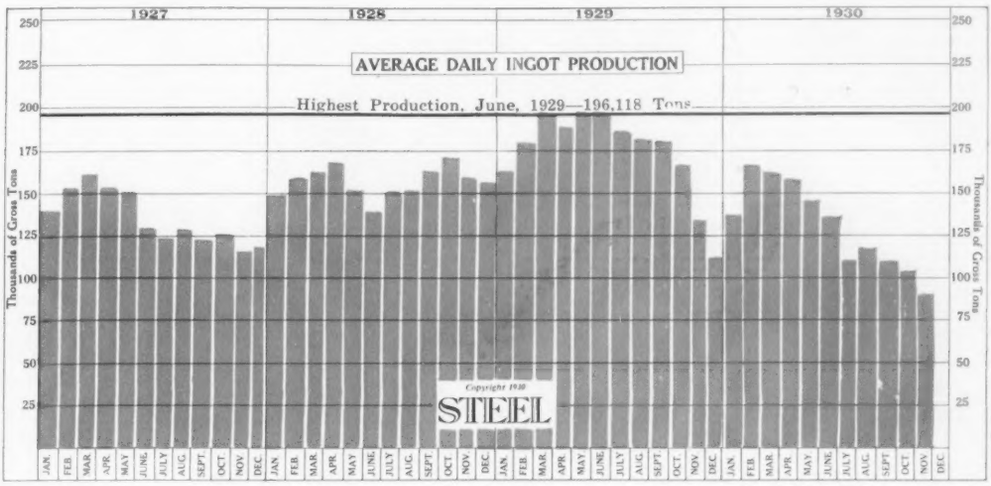
Senator Norris also suggested that President Hoover "arrange with the Red Cross to relieve any distress among the steel companies."

Whether this gratuitous suggestion is prompted by concern for the employes of the steel industry and their families or by facetious pity for the stockholders is not clear. But if it is based upon the belief that workmen of steel companies are faring worse than those of other industries, we again refer the senator to facts.

Steel companies are leading the units of all other industries in the extent to which they are taking care of their employes during this trying period. The steel industry has gone on record as opposing wage cuts and adherence to this policy by the various units of the industry has been practically unanimous. The feat of steelmakers in absorbing the losses incurred by a drop of six dollars a ton in steel prices since Jan. 1—without cutting wages—deserves the highest commendation.

We trust that when Senators Norris and Walsh again are moved to exercise the senatorial prerogative of viewing with alarm affairs of the steel industry, they will have a better grasp of the facts than is apparent in the case of the recent outburst.

THE BUSINESS TREND



1929	
Nov.	135,116
Oct.	167,098
Sept.	181,119
Aug.	182,491
July	186,561
June	196,118
May	195,787
Apr.	190,387

1930	
Nov.	89,379
Oct.	100,756
Sept.	110,307
Aug.	119,050
July	112,823
June	137,610
May	149,066
Apr.	159,764

Production Rate Is Lower, Price Trend Indefinite

COMPLETE statistics of production in November show no marked deviation from expectations. STEEL'S weekly estimates of steelmaking operations were as follows:

Issue	Estimate, per cent	Average
Nov. 6	45 to 48	46.5
Nov. 13	44 to 46	45.0
Nov. 20	43 to 45	44.0
Nov. 27	43 to 45	44.0
Average for month		44.87

The average of STEEL'S estimates, namely 44.87 per cent, corresponds closely to the average of 44.64 per cent computed by the American Iron and Steel institute from monthly returns from companies which made 94.27 per cent of open-hearth and bessemer steel ingot output in 1929. The agreement is noteworthy in view of the many difficulties which attend the preparation of weekly estimates.

Total Output of Ingots and Castings About 41,000,000 Tons

November production of steel ingots as reported by the institute was at the daily rate of 89,379 tons. The average rate to date in 1930 is 132,087 tons, which while extremely low in view of the experience of recent years, still is above the 10-year average. Total production for 11 months of 1930 is 37,644,765 tons. With December's production and with electric and crucible ingot tonnage (not reported in the institute's monthly figures) the total for the year should be approximately 40,000,000 tons.

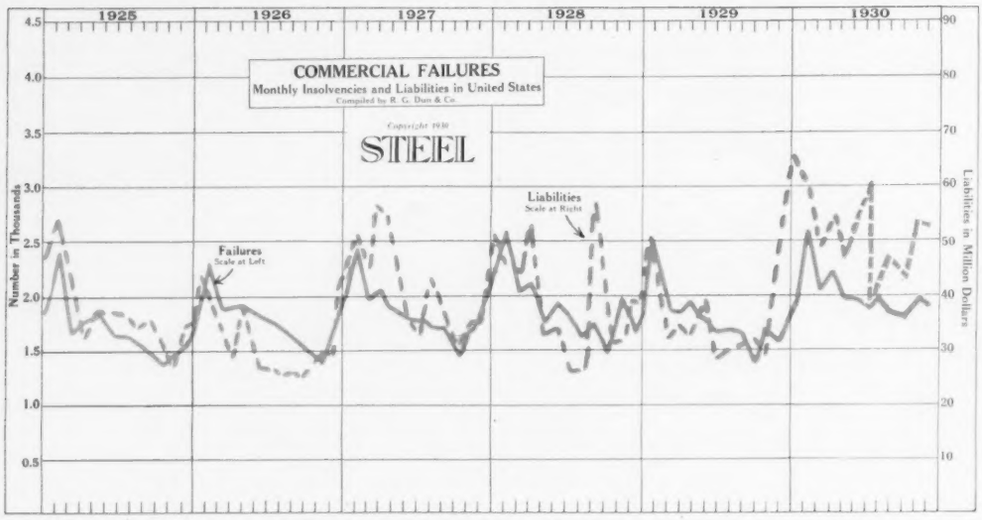
Steel castings output will swell the total for steel ingots and castings to slightly more than 41,000,000 tons. Comparing this figure with the total of 56,433,473 tons of ingots and castings produced in 1929, we find that the decline in 1930 will be about 15,000,000 tons, or 27 per cent.

The demand for steel, as indicated by the activities of important consuming groups, has not changed appreciably. The automobile industry made slightly fewer cars in November than in October, although it appeared for a while that November's output might equal that of October. The prospect for December is clouded by numerous increases and reductions in schedules, which at the moment seem destined to cancel each other so that December's total will not be far from that of November.

Prospect of Railroad Buying Is Good; Car Awards Fair

The hope that the railroads may take fair tonnages in the next few months seems to be well founded. However, freight car awards in November were only fair in number. Railroad earnings in October were up from September, but still discouragingly low from the standpoint of dividend requirements.

Prices continue unsettled as to trend. Bradstreet's index for Dec. 1 dipped below $10 for the first time in many years. STEEL'S composite of 14 steel and iron prices as of Dec. 3 stood at $31.84, a drop of 2 cents from the previous week. However, the price situation is improving and while the effect of the announced one dollar advance for first quarter orders will not be apparent for several weeks, the influence of prospective firming of quotations is constructive. Copper prices, after rising spectacularly several weeks ago and then dropping rapidly, again have firmed to 11 cents —thus holding part of their original gain.



Liabilities

Nov., 1930	$55,260,730
Oct., 1930	56,296,577
Nov., 1929	52,045,863

Number

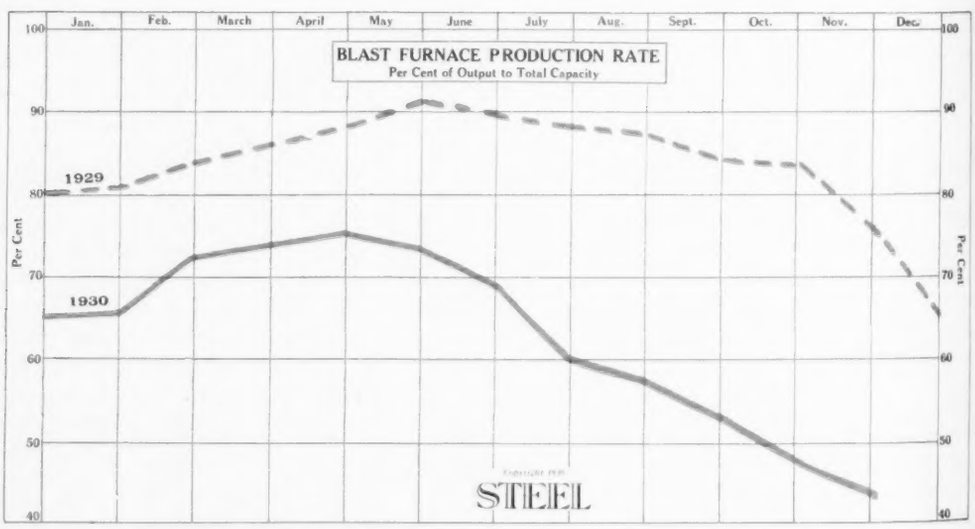
Nov., 1930	2,031
Oct., 1930	2,124
Nov., 1929	1,796

Commercial Defaults, Slightly Under October, Set New November Record

That commercial failures in the United States dropped slightly during November, both in numbers and the amount of liabilities, cannot be interpreted as an actual decrease in the rate of defaults, since the month contained one day less than October and was broken up by holidays. The number of insolvencies in November, according to the report of R. G. Dun & Co., was 2031, involving liabilities of $55,260,730, as compared with 2124 involving $56,296,577 in October; the past month was the highest November on record. A year ago there were 1796 failures and liabilities were $52,045,863. The 23,830 business failures during the past eleven months represent an increase of about 14 per cent over the same period in 1929.

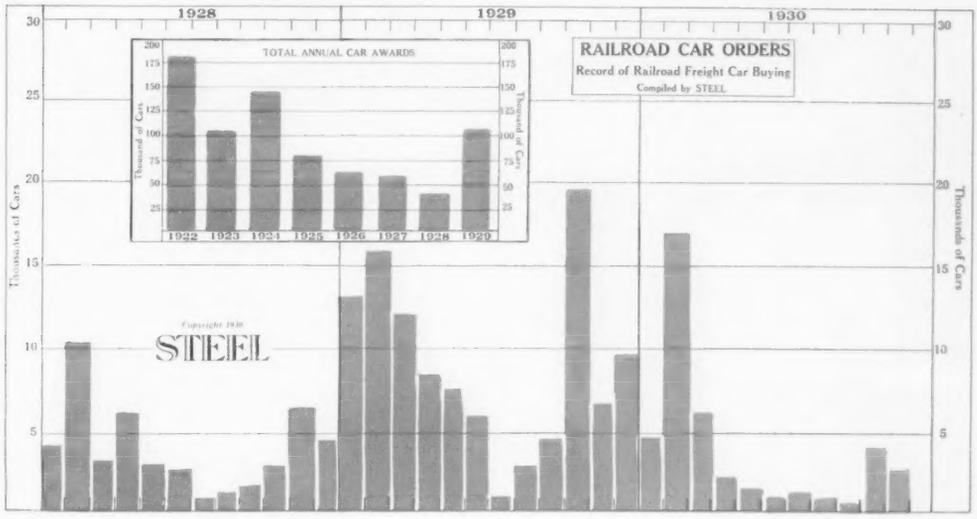
Blast Furnace Rate Reaches Low of 44.1 Per Cent of Capacity

In company with a sharp cut in the output of pig iron, the blast furnace production rate, expressed in terms of percentage of total capacity, fell to 44.1 per cent during November, following a decline from 53.8 per cent to 49.6 per cent in October. Since April the blast furnace rate has been stepped down from 75.4 per cent of capacity. In November of last year furnaces were operating at 75.8 per cent as compared with a rate of 82.6 per cent in October of that year. A net loss of four furnaces during November, 1930 brought the total in blast to 107. In July 18 furnaces became inactive, in August 7, in September 11, and in October 15. Not since October, 1921, have there been fewer furnaces in blast.



Per Cent

	1930	1929
Nov.	44.1	75.8
Oct.	49.6	82.6
Sept.	53.8	83.3
Aug.	57.8	86.4
July	60.3	87.2
June	69.3	88.5
May	74.2	89.8
Apr.	75.4	87.4



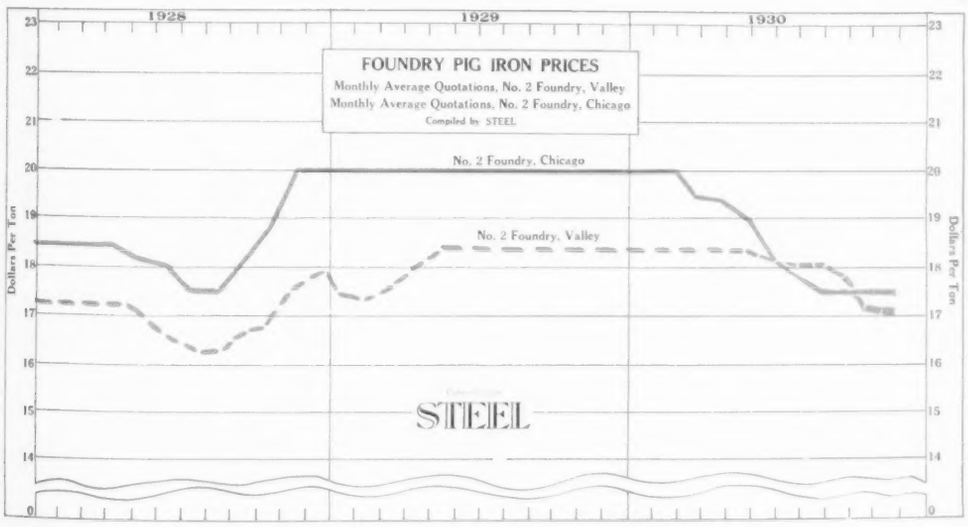
	1930	1929
November	2,580	6,361
October	4,075	19,506
September	535	4,517
August	1,070	2,854
July	1,348	341
June	998	5,886
May	1,392	7,562
Apr.	1,997	8,205

Car Orders Decline from Previous Month, Contrary to General Seasonal Trend

Buying of railroad freight cars in November reached a total of 2580 cars, which constitutes a retreat from the forward movement of October, when 4075 cars were placed. November purchases are the fifth largest of the year to date, exceeding those of the months from April to September, inclusive. For the 11 months of 1930, orders have been 42,212 cars, well under half of the figure of 96,395 cars for 11 months of 1929, but over the 1928 total, 39,287. The present status of inquiries provides some ground for the belief that December will not fall below November, in which case buying during the year will be almost exactly equal to that of 1928, which was a light year. In 1929 a total of 106,105 cars was awarded.

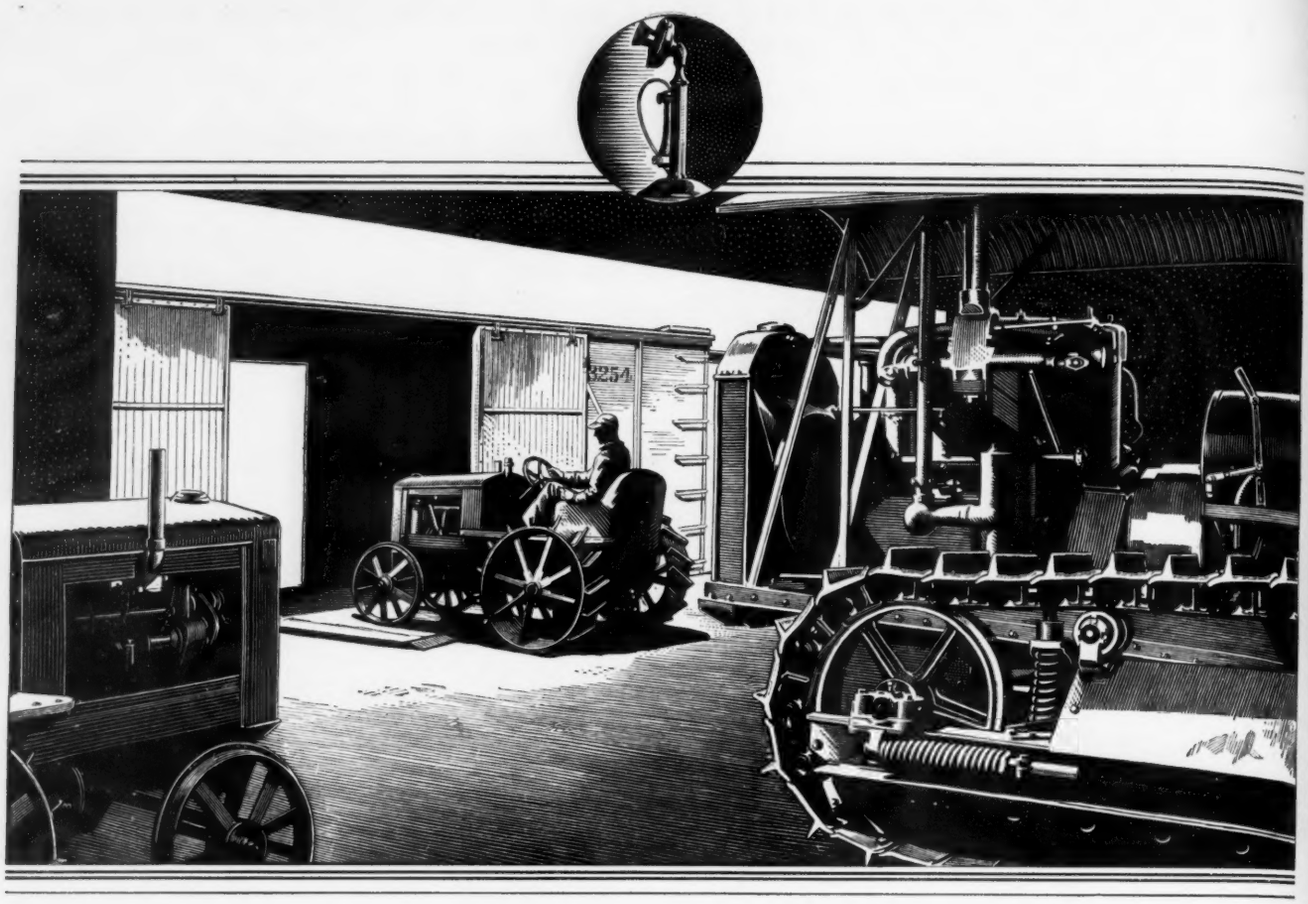
Valley Prices for Pig Iron Widen Spread Below Chicago Quotations

The normalization of foundry pig iron prices went on during November as No. 2 foundry pig iron, Chicago furnace, maintained a level of $17.50 and No. 2 foundry, valley furnace, declined again to $17. November is now the second month in which valley quotations have dipped under those at Chicago. Since the price of $17.50 was reached at Chicago in August, at which point it has since held, valley prices have moved downward from $18 to $17.87 in September, then to $17.20 in October, and finally to $17. The present spread of $.50 between the two quotations still is less than usual, which would indicate that valley prices must subject themselves to further revisions. However, such a change has been resisted since mid-October.



Monthly Averages

		No. 2 Foundry Chicago	No. 2 Foundry Valley
Nov.,	1930....	$17.50	$17.00
Oct.,	1930....	17.50	17.20
Sept.,	1930....	17.50	17.87
Aug.,	1930....	17.50	18.00
July,	1930....	17.90	18.00
June,	1930....	18.37	18.37



Business was Quiet... but the Telephone brought $22,200 in New Orders

A TRACTOR company's sales had fallen off to a marked degree. A telephone sales program to distant customers was decided upon. One result was $18,400 worth of business. Another, a $3800 order after the purchaser had refused a personal interview.

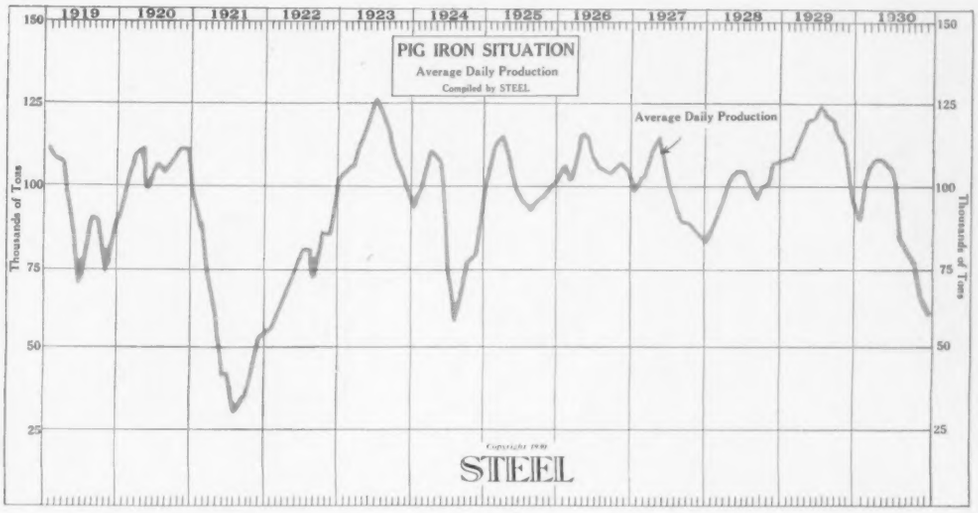
An Eastern lumber company regularly "visits" lumber yards in five states by telephone. In one month 550 carloads of lumber totaling nearly $500,000 were sold by this modern method. Toll bills averaged less than one-half of one per cent.

Business firms, large and small, are using out-of-town telephone service more than ever to increase sales . . . reduce distribution costs . . . meet competition. New markets are developed at little expense. Customers and prospects are economically contacted between salesmen's visits.

Develop your business by telephone. Best results are obtained by having a definite plan for executives and salesmen to follow. Your local Bell Telephone Business Office will gladly submit a plan to meet your needs.

Inter-city calls are cheap, definite, resultful. Typical station-to-station day rates: Pittsburgh to Indianapolis, $1.50. Boston to Atlanta, $3.50. New York to Baltimore, 90c. Philadelphia to Seattle, $8.50. Bell Telephone service is *Quick . . . Convenient . . . Universal.*

BELL SYSTEM
AMERICAN TELEPHONE & TELEGRAPH CO.
AND ASSOCIATED COMPANIES



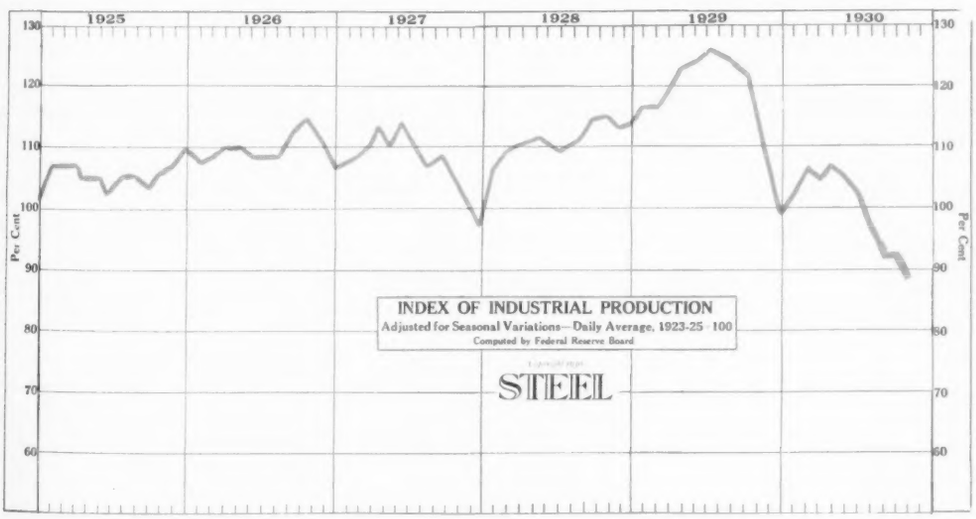
	1930	1929
Nov.	62,180	106,081
Oct.	69,851	115,747
Sept.	75,893	116,548
Aug.	81,455	120,845
July	85,110	122,016
June	97,817	123,837
May	104,564	125,753

November's Daily Output of Pig Iron Loses Further Ground Rapidly

The November drop in the output of coke pig iron amounted to 11 per cent, according to the monthly report of average daily production compiled by STEEL. The daily rate in the past month was 62,180 tons as compared with a rate of 69,851 tons in October, the latter month having declined 8.2 per cent from a rate of 75,893 tons in September. A seven-month decline has brought production to figures similar to those of 1924, although with acceleration not quite so great. The present decline is much less severe than that of 1921, when output fell from well over 100,000 tons daily, late in 1920, to the 30,000-ton level in the middle of 1921. In November, 1929, the daily rate was 106,081 tons.

Industrial Production Index Drops, Due to Slack Rates in Manufacturing

Because manufacturing activity fell off sharply during October, the index of industrial production compiled by the Federal Reserve board for that month dropped to 88, a loss of 3 points from the preceding month. After tapering to 100 in June the indicator fell to 94 in July and 91 in August, then held its own in September. A year ago it stood at 117. The October activity in coal production accounted for an increase in the mineral component of the industrial index, but a severe decline in manufacturing more than offset this gain, and the combined index places industrial production at a point very close to the low reached in the summer of 1924, at 84.



	1930	1929
Oct.	88	117
Sept.	91	121
Aug.	91	136
July	94	124
June	100	127

IF IT'S DONE WITH HEAT, **YOU CAN DO IT BETTER WITH GAS**

THE tunnel kiln has revolutionized many branches of the ceramic industry. Ten years ago tunnel kilns were practically unheard of; today hundreds are in use. And it is generally acknowledged that gas heat is in a large way responsible for the development of the tunnel kiln to its present state of efficiency. Tunnel kilns are essentially gas-burning equipment.

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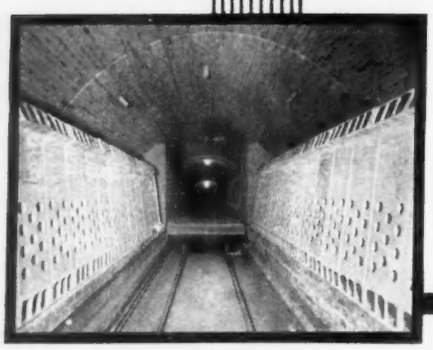

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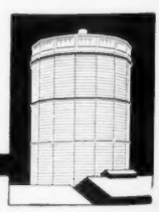
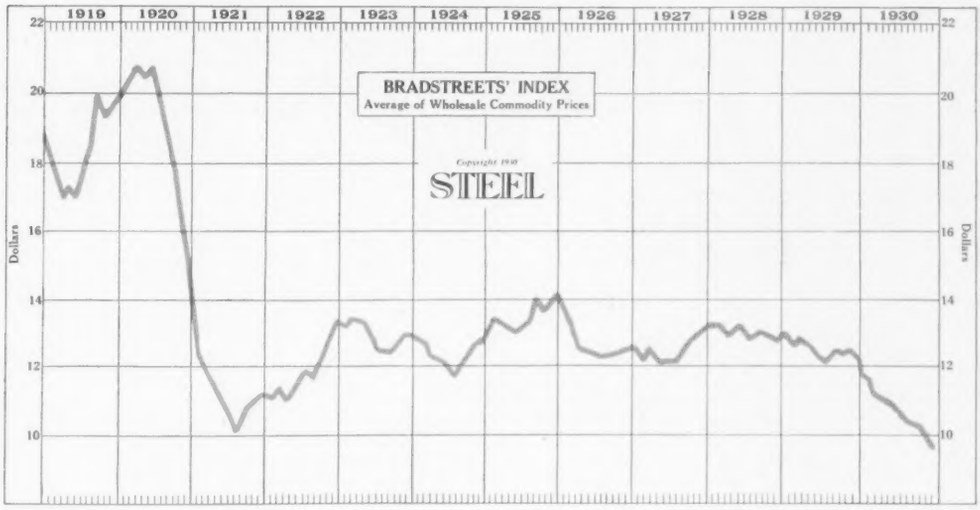




	1930	1929
Dec. 1	$ 9.84	$12.23
Nov. 1	10.06	12.40
Oct. 1	10.30	13.70
Sept. 1	10.43	12.67
Aug. 1	10.45	12.63
July 1	10.56	12.49

Bradstreet's Index Reaches $9.84 As Commodity Prices Drop

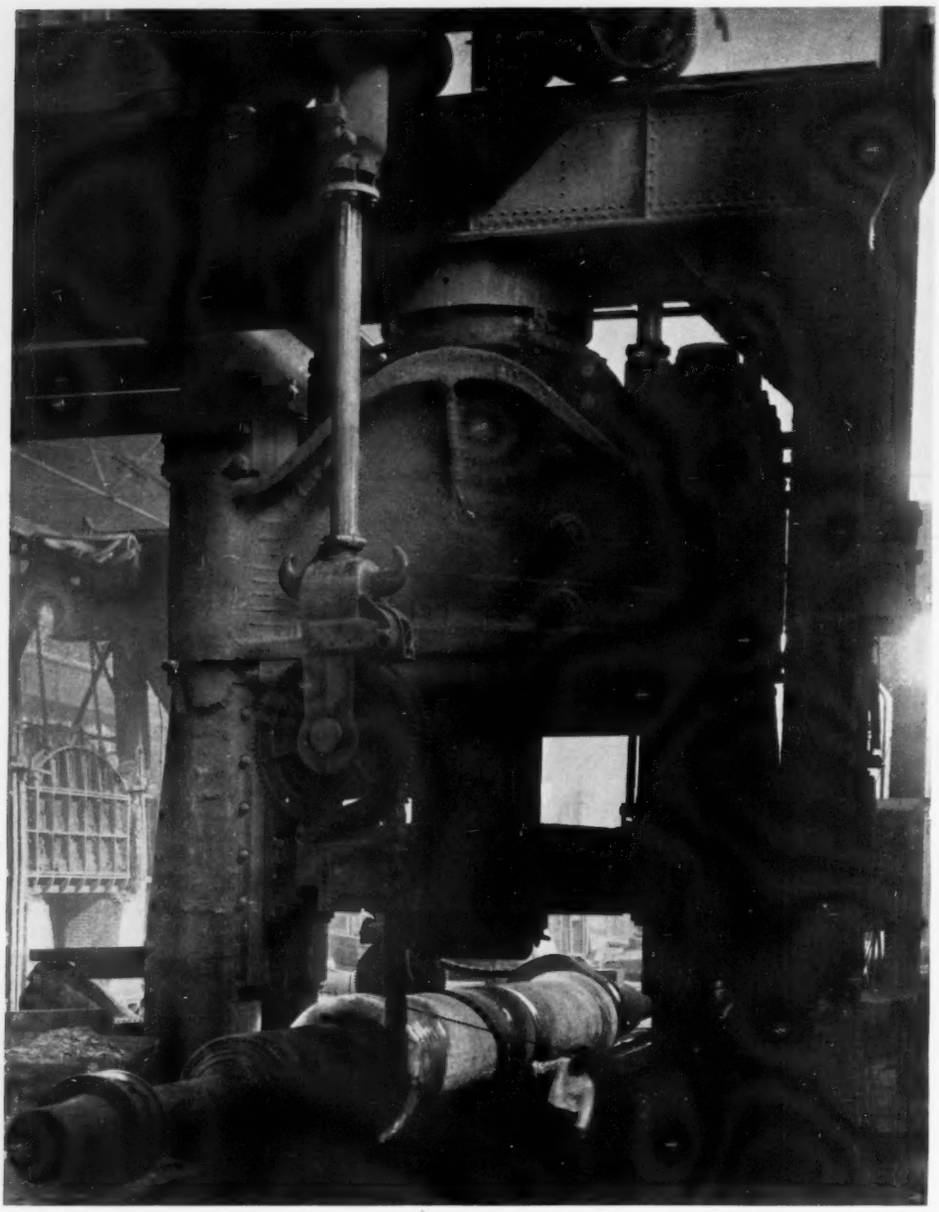
Bradstreet's index as of Dec. 1 was carried below $10 for the first time in years, and now stands at $9.84, a decline of 2.2 per cent from $10.06, the index for Nov. 1. Wholesale prices are now at the lowest level since September, 1915, but are still 12.9 per cent above a low point of August, 1914. As shown in the accompanying chart, the index reached a high peak in February, 1920, and a valley in June, 1921. The present index is 52.8 per cent under the peak and 7.3 per cent under the low point. As compared with a year ago, the decrease amounts to 19.6 per cent, the index then standing at $12.23. The present drop is the fourteenth in an unbroken line.

Increase in Railroad Earnings Not Enough To Give October Good Record

Net operating income of 171 Class I railroads during October was $112,251,002. The gain over September's earnings, which were $104,078,334, indicates that monthly seasonal increases are becoming smaller. Railroad income has risen beyond the $100,000,000 mark but twice this year. For ten months of 1930 earnings have totaled $772,440,930 as compared with $1,116,066,690 during the same period last year. The month of October in 1929 witnessed an increase from $133,898,013 to $152,987,127. In terms of annual return on the investment, October's earnings represent a rate of 3.31 per cent as compared with 4.62 per cent in October, 1929.

Million Dollars

	1930	1929
Oct.	112.3	152.9
Sept.	104.1	133.9
Aug.	95.6	141.7
July	82.7	122.8
June	68.8	105.8



Modern Blacksmith's Hammer

PERFECTION of immense equipment and adaptation of efficient handling methods are two factors involved in the fabrication of heavy alloy steel forgings, in great demand by present-day industries. Illustration above shows a 10,000-ton hydraulic forging press shaping a large alloy steel pressure vessel, in the plant of the Midvale Co., Philadelphia.

LARGE roll shells of alloy steel, for use in ore grinding installations, are forged and machined.

Alloy Forgings Have Wide Application

Improved Technique Developed in Forming Heavy Pieces

BY A. L. HAMILTON
Sales Engineer, The Midvale Co.

FOR many years the Midvale Co., Nicetown, Philadelphia, has been engaged in the manufacture of alloy steel forgings and in the development of new and improved ferrous alloys for special purposes. Probably the earliest extensive use of such material was made in the famous Eads bridge at St. Louis, in 1874, into which entered a large tonnage of chrome steel made at Midvale. This unusual use no doubt stimulated the technical world, for extensive industrial applications were soon to follow.

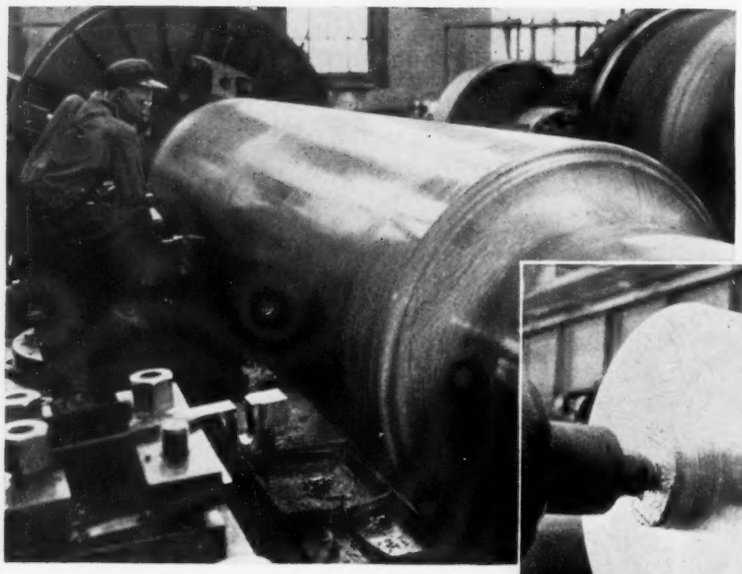
The present-day requirements in large alloy steel forgings, for supermachines and pressure process units, have assumed tremendous proportions, engaging the utmost skill and ingenuity. Recent forging productions have involved individual ingot weights of 200,000 to 400,000 pounds which were reduced by forging and machining into single pieces weighing 150,000 to 250,000 pounds. Apart from the perfection of immense equipment and forging technique, the success of this work can be attributed to the care and study of other factors, such as the origination or approval of forging designs; selection, melting and pouring of suitable compositions; machining, treating and testing of finished forgings.

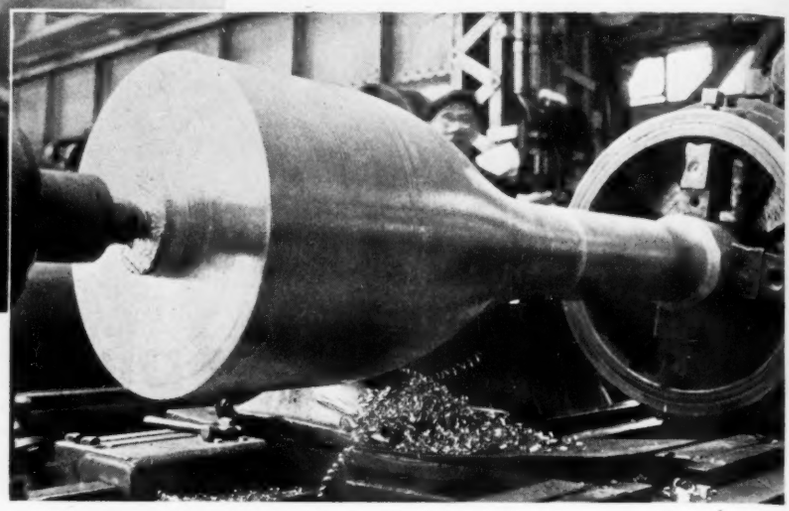
Oil refinery research pressure vessel of "18-8" chrome-nickel steel

Most of the large solid and hollow alloy forging development has been confined to the oil, power, chemical and pressure process industries, the specific details of which have been guarded closely by the user and consequently by the maker.

In view of the recent accelerated development in alloy steels, and the rapid expansion of the process industries, it seems timely to call attention to the achievements, as well as the availability of large and small forgings in either high or low alloy compositions. It is possible that some of the references following will be suggestive of newer uses, the feasibility of which can be easily determined.

Table II is a partial list of some of the applications of the past ten years. Some of





INTERMEDIATE stage of manufacture of a large hardened and ground roll, forged from alloy steel, is shown at the left. Final surface hardness ranges from 75 to 100 on the Shore hardness scale. Below is shown a machining operation on a special forging, containing 25 per cent chromium and 12 per cent nickel

items now are produced in large tonnages and therefore have been reproduced many times. The operating conditions have covered most all kinds of physical and chemical exposure. Details of the latter, however, have been omitted due to the fact that they are peculiar to "certain" processes.

With the introduction of high-chromium and high-chrome-nickel alloy steels, forging problems were numerous. However, with the increasing demand for these heat and corrosion-resisting forgings, during the past four or five years, satisfactory progress has been made in handling these and related alloys.

Alloy steels now cover a wide range of compositions and the many combinations available afford possible solutions to many perplexing problems.

Table I lists some of the alloy steels that are melted, cast and forged, machined and heat treated by the Midvale Co.

Table I

Special Alloy Analyses

Steels of high and low alloy content for solid and hollow forgings
Approximate analyses, only major elements indicated.

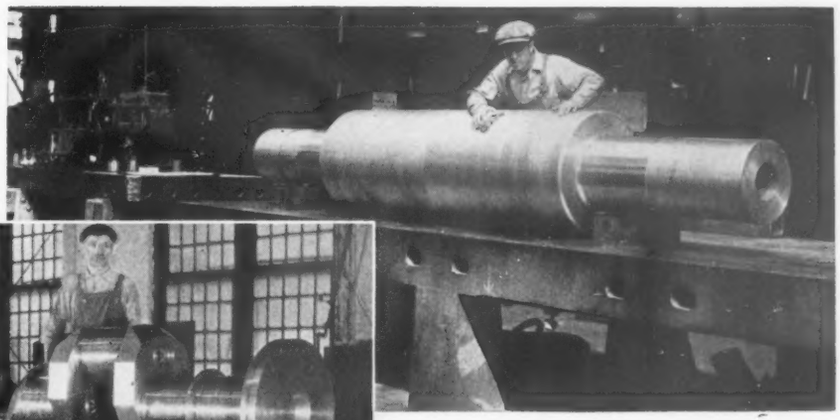
	Per Cent						
	Carbon	Vanadium	Tungsten	Chromium	Nickel	Molybdenum	Comment
All S. A. E. types							
Chrome-nickel-molybdenum				0.75-1.25	1.5-2.0	0.35-0.50	
Chrome-molybdenum				1.0-2.0		0.35-0.50	Proportion of elements changed according to conditions or properties desired.
Chrome-molybdenum-vanadium		0.15-0.30		1.0-2.0		0.35-0.50	
Chrome-vanadium		0.15-0.30		2.0-3.0			
Chrome-tungsten-vanadium		0.15-0.30	1.5-2.0	2.0-3.0			
Midvale "Shockproof" steel							Special nickel steel.
Diamond brand	1.70			18.5			Heat and corrosion-resisting for rollers, pistons or concussion tools.
Stainless steel							
"18-8"	0.06 up			18.0	8.0		
Midvaloy "BX"	0.06 up			24.0	11.0		
Midvaloy 25-20	as required			25.0	20.0		
Stainless iron							
A. M. F.					48.0		Special alloy for liquid air-exposure.
A. T. V. -1	low			11.0	36.0		Turbine blading for 1000 degree Fahr. steam temperature gland springs, etc.
A. T. V. - 3	low		3.5	14.0	26.0		Gas turbine rotors; high hot strength.
B. T. G.	low		2.5	11.0	60.0		For temperatures of 1800-2100 degrees Fahr.
H. R. - 1	low		4.0	20.0	7.0		For high hot strength and to resist sulphurous gases.
Hy-X	low			7.0	20.0		Oil still plugs; resists corrosion and mechanical sticking.
High speed steel							
Midvale No. 11							
Midvale No. 26							
Midvaloy "Aero-valve" steel			2.0	14.0	20.0		For airplane, diesel, and automobile engine valves.
Midvale Moulimphy							Special alloy for glass molds and rolls; non-sticking, noncracking characteristics.

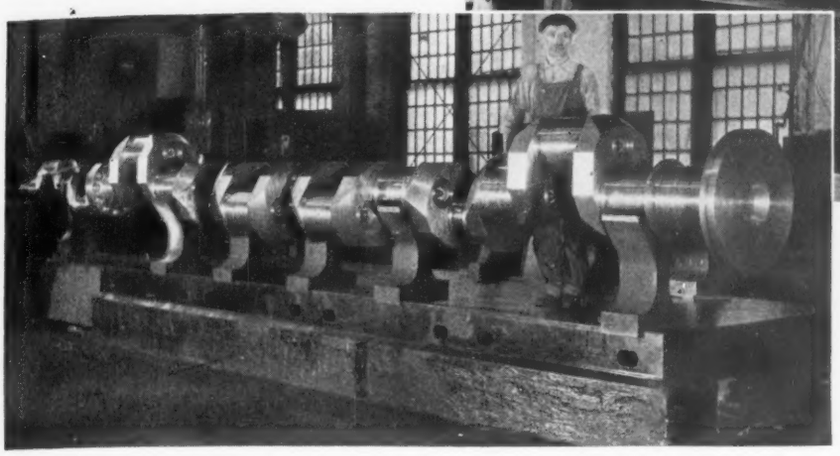
Carbon Steel Forging Important

While the high alloy steels may offer many advantages it is suggested that carbon steel forgings still have a place, for while they do not build for permanence yet their "sufficient" life may favor economic construction, particularly in many industries where early obsolescence of design is met. Systematic observation and record, however, should be made of progressive deterioration so that an exact analysis can be made, leading to determination of the most efficient and economical steel for the purpose.

From the variety of applications and possible alloy compositions it is apparent that close co-operation is required between the user and maker to ascertain exactly every operating condition that may influence the safety as well as the economical construction. It is gratifying to mention the assistance and co-operation given

RIGHT shows a hollow alloy steel calender roll, 24 inches by 60 inches, with uniformly thin wall, cooled internally. Below is a large diesel engine crankshaft, forged from chrome-vanadium steel





by the electrical, chemical, oil and other industries in the solution of their problems, by their special knowledge of specifications and operating conditions. This spirit has been of material benefit in advancing the special forging industry.

The subject of materials and methods of production is becoming more and more a matter of concern to the forging user, particularly in the use of heat and corrosion-resisting alloys, where certain specifications are exacting—for example, when carbon is limited to a maximum of 0.06 or 0.07 per cent. Table III indicates the types of furnaces used at the Midvale plant for the production of alloy steels. The capacities and operating cycles suggest the economy and flexibility of operation.

Applications Are Numerous

A casual survey will show that almost every industry has some necessary application of some type of alloy forging to meet conditions of high stress, shock loads, abrasion, corrosion or elevated temperatures. This position is well illustrated by the general adoption of forged alloy steel rolls, by manufacturers in widely different lines of business, to meet many conditions of operation, such as in cold-rolled strip and sheet mills where uniformly hard, highly finished, roll surfaces are required; in glass mills where rolls must retain smooth true surfaces when subjected to the high temperatures of molten glass; in chemical plants where roll surfaces must be highly finished and to resist the action of corrosive liquors; in paper and rubber mills for various calender rolls to obtain lightness of construction, minimize deflection in long spans, insure toughness to resist shock and hard surfaces that resist scoring or pitting, thereby insuring high finish and the maintenance of a uniform product.

In the general machinery field, for many parts such as crankshafts, piston rods, locomotive and mine car axles, pile hammer pistons and many other units, a decided advantage is possessed by alloy forgings in their higher and more uniform physical

Table II

Solid and Hollow Forgings

	Temperatures, degrees Fahr.	Pressures, lbs. per sq. in.	Comment
Cylinders or Tubes			
Hydraulic pressure chamber	normal	45,000	
Superheated steam receiver	700– 800	1400	
Chemical process receiver	1000–1200	4500	
Oil refinery research autoclave	600–1000	10000	
Oil refinery furnace tubes	700–1200	1400–1500	
Chemical synthesis tubes	900–1200	10000–15000	
Rolls			
Hollow rolls for glass rolling	1800–1900		Must be nonoxidizing and resist glass sticking to roll.
Hollow calender and grinding; rubber mill rolls	200–300		Thin walls give good temperature regulation.
Solid and hollow paper mill calender rolls; cold-rolled strip and sheet mill rolls			28 inch diameter x 84 inch face, not unusual size.
Solid hot forming rolls (strip)	1000–1700 water-cooled by flushing		Rolls retain hardness and resist abrasion.
Shells and Rings			
Roll shells—mining industry, also for clinker and coal.			
Heavy-duty ring gear blanks			
Nonmagnetic generator rings.			
Extrusion liners and blocks	1500–1600		For brass, copper and other alloys; resist scoring and pick up, as well as bulging.
Hot oil pump liners.			
Centrifugal cast-iron pipe molds	Molten iron		Must resist cracking and scoring
Shafting and rotors			
Gas turbine rotor			Operating at 10,000-50,000 revolutions per minute.
Ship shafting.			
Submarine crankshafts.			
Rams for extrusion			High elastic limit for stiffness.
Mining and cement mill driver.			Material of extreme toughness.
Locomotive forgings, pistons, side rods, axles.			
Turbine and generator shafting.			
Miscellaneous			
Diesel engine valves and seats.			Must resist corrosion of hot gases —high hot strength.
Steam turbine blading (bar blanks).			For superheated steam, up to 1000 degrees Fahr.; also saturated steam resisting corrosion, water cutting and embrittlement.
Mandrel bars for carbon or alloy tube drawing.			Hardness as furnished ready for use, about 500 brinell.

Oil refinery research bomb of "18-8" chrome-nickel steel, for use in temperatures of 700-1000 degrees Fahr. and pressures of 5000-10,000 pounds per square inch

properties, particularly the increased shock-resisting characteristics that especially favor certain of the alloy steels.

The challenge of many mechanical and chemical problems has, in a large measure, been answered with the present development of alloy steels and methods of construction and forging interests now are confronted with the responsibility of investigating their fullest applications to obtain the maximum technical and economic benefit.

Company Is Developing New Pressed Metal Products

Midland Steel Products Co., through its experimental laboratory at the Cleveland plant, has developed a number of new products and processes during the past year, some of which promise to add materially to the company's volume in 1931. Among the new lines developed are certain pressed steel parts for electric washing machines and the company already has received substantial orders for these parts from washing machine manufacturers.

The laboratory building in Cleveland was constructed in 1929, and since that time a research staff of engineers has been engaged in studying the problems of pressed steel as applied to the automotive industries and to other lines.

Foundry Research Holds Industry in Place

How the broad scope of foundry research, technical, practical and commercial, is holding the industry in its place in the march of industrial progress was outlined by D. M. Avey, editor, *The Foundry*, Cleveland, in an address before the Chicago Foundrymen's club, Dec. 4. His subject was "Research and Researchers."

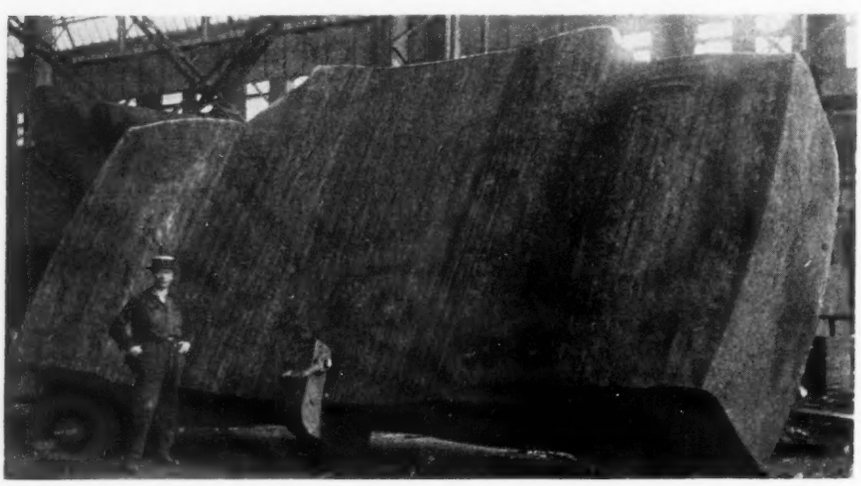
Mr. Avey mentioned the fields covered by numerous organizations and how they tie in with the American Foundrymen's association activities. The latter organization, he asserted, provides the most outstanding agency in foundry development work. Included in the groups whose studies are far-reaching in the welfare of the foundry industry were named the Steel Castings Development bureau, Electric Steel Founders Research group. Cast Iron Pipe and Research association, Manufacturers of Chilled Car Wheels, Gray Iron institute, Steel Founders society, Malleable Iron Research institute, bureau of standards, Nonferrous Metal institute, Mellon Institute of Industrial Research, National Research council, and others. The speaker suggested the possibilities of further studies into merchandising and marketing of castings as well as developments that may come in the surveys of foundry capacity. L. E. Gilmore, Crane Co., Chicago, was elected president of the club. R. E. Kennedy, American Foundrymen's association, was re-elected vice president; and A. N. Wallin, was re-elected secretary-treasurer.

Table III

Melting Furnace Data

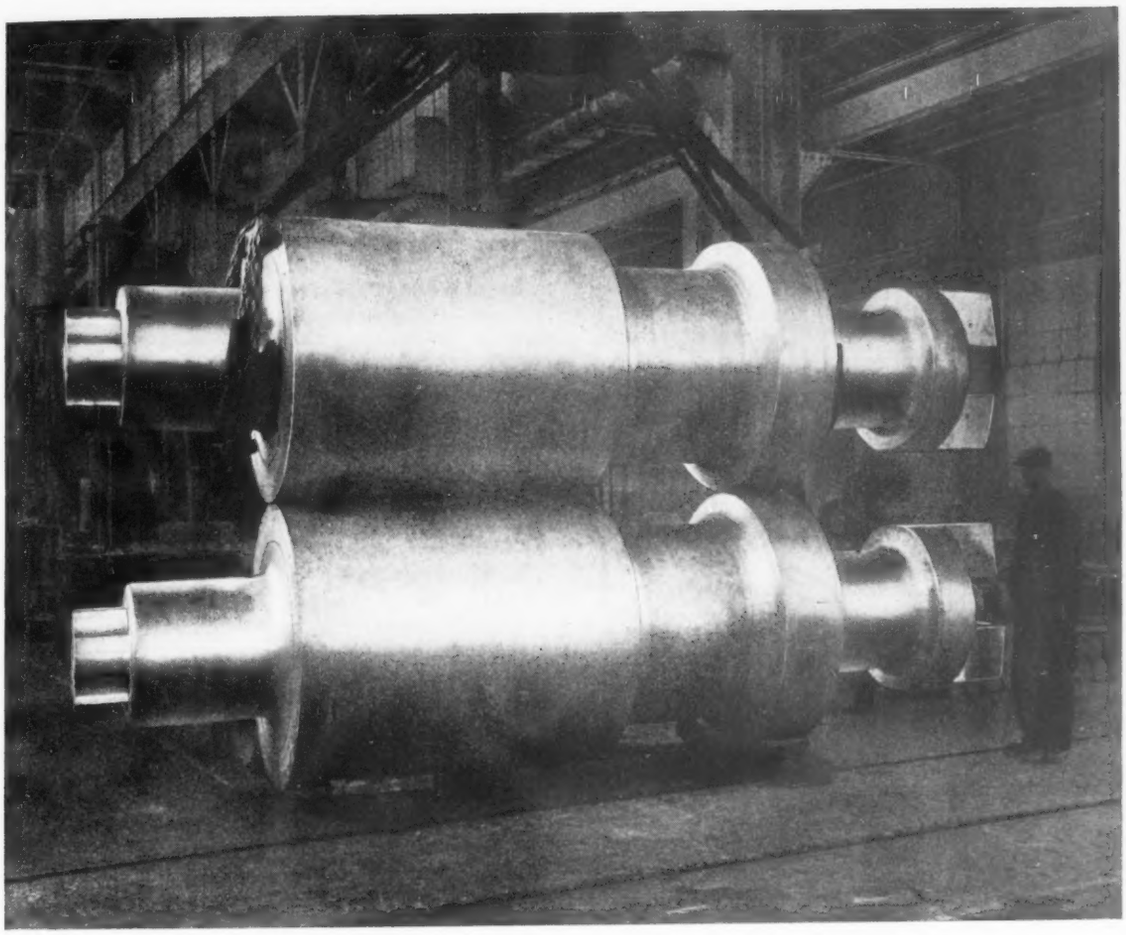
	Open-hearth furnaces	Heroult electric furnaces	Rennerfelt electric furnaces	Ajax-Northrup high-frequency furnaces
Capacity	50-85 tons	5-9 tons	1½-2 tons	100, 500, 1000 pounds
Melting time	10-12 hours	4-8 hours	3 hours	1-2 hours
Maximum individual ingot weight	400,000 pounds and over	18,000 pounds	4,000 pounds	135, 650, 1250 pounds
Type of steel melted	Carbon, or low alloy steels, similar to S. A. E. standards.	S.A.E. or high-alloy types.	High-alloy types.	*High alloy types.

*This method of melting is especially suited to production of alloys requiring low carbon content, ranging from 0.06-0.15 per cent.



Entablature forging weighing 289,000 pounds, material being 3½ per cent nickel steel

World's Largest Blooming Mill Rolls Recently Made by Mesta



57" diameter, 120" body length, 18'-3½" total length. Weight in Rough 105,000 lbs. each.

Mesta

Mesta Machine Company
Pittsburgh, Penna.

Depression Forces Attention on Handling Equipment

MATERIALS handling if considered as a separate industry assumes an importance scarcely second to any other industry in the country, according to Jervis B. Webb, president, Jervis B. Webb Co., Detroit, who presided at one of the materials handling sessions conducted during the annual meeting of the American Society of Mechanical Engineers in New York, Dec. 1-5. All of the materials handling meetings were well attended and featured by lively discussions. The general recession in industrial activity this year has turned increased attention to the use of materials handling equipment to further reduce manufacturing costs according to several speakers. One manufacturer of handling equipment said that orders for special equipment were heavier this year than ever before and he attributed this partly to the general depression.

Ten Divisions Described

The progress report of the materials handling division was presented by George E. Hagemann, associate editor, Alexander Hamilton institute, New York, and chairman of the materials handling division. This report, which was the longest of any of the progress reports of the annual meeting, covered 33 printed pages with progress described under some eight or ten divisions such as cranes, motor trucks and trailers, pneumatic tubes and conveyors. Each section was prepared by an authority and many of these co-authors took part in the discussion following the report. Mr. Hagemann pointed out that the division covering electric and cupola charging machines had been prepared by R. L. Turner, vice president, Shepard Niles Crane & Hoist Corp., although by error his name had been omitted from the printed report.

F. J. Shepard, treasurer and chief engineer, Lewis Shepard Co., Watertown, Mass., when discussing the progress report said there had been a marked extension in the size of units handled by conveying equipment during the year. He said this extension had been in both directions toward smaller weight and larger weight per unit.

James A. Jackson, General Electric Co., Schenectady, pointed out that elevators should be considered as materials handling equipment and subject to obsolescence just the same as any other equipment. He said that it often happens that an otherwise well equipped plant is handicapped by too small or too slow elevator capacity. Too often an elevator is considered part of a building and therefore not to be replaced until the building itself is replaced. Mr. Jackson pointed out that building designers should make allowance for progress in elevator design and should make it easier for replacements to be made.

Elevator manufacturers now are prepared to make elevators just about as large as the users want said one manufacturer who added that elevators with capacity to take loaded freight cars have been constructed and are now in use. The report included a paragraph describing the use of labor saving equipment formulas and later this particular subject was taken up for separate discussion. By equating symbols representing six charges to other symbols representing the savings it is possible to solve any unknown. The savings were divided into three classes: savings in direct labor, savings in overhead and savings due to increased output. Several members spoke of the usefulness of the formula and asked that it be included in a future report.

At a meeting of the manufacturers committee of the materials handling division, G. L. Morehead, vice president, Link-Belt Co., Philadeldelphia, presented the report of the subcommittee on classification and nomenclature and recommended the publishing of a comprehensive catalog of materials handling equipment giving definitions and descriptions. The compiling of such a catalog is a task of no small magnitude, according to speakers at the meeting. However, the consensus of opinion was decidedly in favor of such a publication and many manufacturers said their companies would be glad to stand the proportionate expense.

A representative of the Newport

(*Concluded on Page 53*)

Automatic Temperature Control for Open Hearth Is Approaching

THE present industrial depression has directed increased attention to economy in utilization of fuels, according to the fuels division of the American Society of Mechanical Engineers which presented a progress report at the annual meeting of the society in New York, Dec. 1-5. This report pointed out that 1930 has seen a general improvement in the operation of existing power equipment and that new equipment which has been installed during the year has been distinguished by its greater simplification and reliability. The report gave detailed figures for production of fuel and among other things stated that the beehive coke production is at present at the low point in its history, or approximately 4.5 per cent of the total coke production.

The trend toward higher steam pressure in industrial plants has continued through the year, according to the report. Commercial boiler units are now being built supplying steam up to 1800 pounds per square inch and 850 degrees Fahr. total temperature. Two units to operate at 1350 pounds pressure with a maximum capacity of 700,000 pounds of steam per hour from each unit are now being erected for the Ford Motor Co.

In the steel industry, progress has been made in the use of mixed coke oven and blast furnace gas for heating open-hearth and heating furnaces. Automatic control of open-hearth furnaces has been successfully applied and this will probably constitute one of the leading future developments. The report shows that in blast furnace construction the trend has been toward larger hearth and bosh diameters.

William L. DeBaufre, head of technical research department, International Combustion Engineering Corp., New York, presented a paper on "Heat Absorption in Water-Cooled Furnaces." This, although technical in character, brought forth considerable discussion having to do with the design of water-cooled furnaces.

Another one of the technical papers having to do with design of heating equipment and prepared by H. C. Hottel, Massachusetts Institute of Technology, Cambridge, Mass., was read at the fuels session. This paper was titled "Radiant Heat Transmission Between Surfaces Separated by Nonabsorbing Media."

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Welded Products Co., Inc.
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American Manufacturing More Democratic Than European

AMERICAN management of industrial properties in Europe acts as a catalyst to promote a better understanding of international economics, according to J. D. Mooney, president, General Motors Export Co., New York, who presided at a well attended and lively management session, during the annual meeting of the American Society of Mechanical Engineers in New York, Dec. 1-5. The principal paper at this session was on American management in Europe and was presented by Wallace Clark, Wallace Clark & Co., New York.

Answering the suggestion that living standards in America should be reduced, Mr. Clark said that any reduction in that direction is unthinkable and that better and better standards must accompany the advance in engineering and management. Without the goal of progress the engineer would be robbed of his chief incentive. No more need for the engineer would exist.

No Monopoly on Brains

W. L. Batt, president, S. K. F. Industries Inc., New York, said that there was a challenge in the development of American production methods and management policies in Europe. Contrary to the general feeling in this country, European labor as a whole is as good or better than American labor. This is particularly true in the case of women. In Europe, he said, a more intelligent class of women is attracted to industry. We must get over the idea, according to Mr. Batt, that America has a monopoly on brains or on quick workers, and we must realize that we are faced with increased competition as we spread our mass production methods abroad.

The immediate threat of Europe in mass production is offset by the maze of boundary difficulties, tariffs and divided interests among the countries of Europe. The markets of Europe at present are too narrow to permit any approach to the American practice in production.

Cartels which were started to overcome this narrow market feature have not been highly successful, according to Mr. Clark, who discussed this phase of the situation. The cartels, he said, usually accept a market as it is and make little attempt to expand it. The United States of Europe, he thinks will come only through industrial and business developments. He told of the social insurance laws in most countries in Europe which add from 10 to 12 per cent to the labor cost, but in spite of this, he thinks, are an advantage to industry rather than otherwise. They give the workers a better feeling of permanence and confidence and tend to reduce labor turnover noticeably.

This discussion continually returned to the subject of unemployment and in this connection Harrington Emerson, Harrington Emerson Inc., New York, said that from a management point of view there was no excuse whatever for unemployment. We must not look for palliatives, he said, but look to the bottom of the matter. We must be less provincial, we must be willing to learn from other countries. There is no unemployment, for instance, in France and Russia. Mr. Emerson has recently returned from Russia, and a discussion of the Russian situation was imminent until the chairman said he thought it was too big a topic for the present session. Mr. Clark said that undoubtedly the Soviet program was the greatest industrial experiment ever attempted anywhere.

The greater democracy among American manufacturing plants as against European was brought out by several who discussed Mr. Clark's paper. This tendency extends clear to the top in European industry and often interferes with efficiency. For instance, a works manager because of class distinction does not attend the tea which the executives attend and does not keep in close touch with economic questions. In certain localities, unless a man is a college graduate, he has no hope whatever of getting into the management or executive rank and in England it sometimes happens that definite schools supply the management material and not to have attended one of these schools means exclusion from management hope.

Mr. Clark told of the difficulty of tying in the executive control with management problems. He said the main question today both in Europe and America was to tie the market to production.

Alloy Steels Expected To Withstand Temperatures Above 1000 Degrees

TENDENCY in industry is toward higher and higher temperatures and pressures in power plant design and this is a challenge to metallurgists to produce alloy steels which will meet requirements. A discussion of the properties of various alloys at high temperature occupied practically the whole session devoted to properties of metals, during the annual meeting of the American Society of Mechanical Engineers in New York, Dec. 1-5.

Two papers were presented, both prepared by T. L. Clark and A. E. White, University of Michigan, Ann Arbor, Mich. Mr. Clark is investigator in the department of engineering research and Mr. White is professor of metallurgical engineering and director of the department of engineering research. A paper on the properties of nonferrous alloys at high temperatures was presented by Mr. White and the other paper on the properties of chromium - nickel, chromium - manganese and manganese steels was presented by Mr. Clark.

In the discussion following these papers, it was stated that it is now fairly common practice in new construction to use up to 750 degrees Fahr. temperature and up to 1300 pounds per square inch pressure in the steam plant. Several stations now building are designed for a temperature of 850 degrees and one speaker told of a plant in operation today at a temperature of 950 degrees and 1900 pounds pressure which used 0.45 carbon steel for its tubes. This steel he said, had a small percentage of molybdenum and was prepared by a special process. The experience of the authors of the paper indicated that it is difficult to use even high carbon steel for such high pressure boiler work. Suitable alloys for high pressure work are known, however, and we may expect to find satisfactory use of alloy steel at 1000 degrees or even 1200 degrees Fahr.

Special Alloy Developed

Alvin L. Davis, research engineer, Scovill Mfg. Co., Waterbury, Conn., gave the composition of an alloy which his company has developed for extrusion rams working at 1250 degrees Fahr., and at pressures up to 150,000 pounds per square inch. He said that hundreds of different materials had been introduced before a satisfactory alloy was developed. His alloy for this work was as follows: Carbon, 0.60 to 0.70, manganese 0.60 to 0.70, chromium 1.25 to 1.50, molybdenum 0.4 to 0.7, vanadium 0.25 per cent. Mr. White said that this alloy was similar to one which his investigation had found excellent for high temperature and high pressure work.

Depression Forces Attention on Handling Equipment

(*Concluded from Page* 48)

News Shipbuilding & Dry Dock Co., Newport News, Va., called attention to the neglect of marine engineers to give materials handling equipment prominence in ship design. He said that two designers from his company were now traveling on freighters to study cargo handling methods with the idea of incorporating the results of this study in the design of two new vessels which the company was to build.

Several interesting features in materials handling developed in the discussion of a paper by N. E. Whittemore, First National Stores Inc., Somerville, Mass. The paper described the distribution of food stuffs to some 2600 retail stores in New England through a central warehouse in Somerville. The general scheme of make up of orders uses a large oval trolley conveyor with 700 different commodities stored on both sides of its path of travel. The material is picked from these storage piles and placed on live skids which are carried with special hangers from the overhead trolley in the form of short trains. By this method 700 tons of material is selected and shipped each day, the average order being about 2 tons. One engineer discussing the paper described a saw tooth truck loading platform which had the advantage of giving side and end access to each truck.

Other features discussed included night truck deliveries in locked containers to avoid traffic congestion in metropolitan districts, skids shipments on trucks and freight cars to avoid rehandling, coordination of belts and gravity roller conveyors and the fact that 25 pounds per cubic foot was the low limit for economical skid shipments. In elaborating on the question of skid shipment, one speaker told of the loading of canned goods on to skids at plants on the Pacific coast, the shipment of these goods, without handling, by boats through the canal and the delivery, still on the same skids, to the retail trade in the east.

Ironmongers' Hall in London Reflects Spirit of the Guild

ONE of the most interesting architectural experiments made in London since the war is the building of the Ironmongers' Hall in Aldersgate. This is invested with all the historical atmosphere of the city guilds. Every detail of the building, without and within, proves that the days of English craftsmanship when men were proud of their work, are not yet past.

Every brick is hand made. Every open panel is fastened to the wall, not with nails but with wooden pegs. Every piece of carving, whether of wood or stone, and also much solid work that is hidden and buried, shows the way that the craftsmen and the operatives co-operated with enthusiasm in order that this hall should recall the golden age of craftsmanship.

Ironmongers were first mentioned in 1300, but not long after they formed a Guild, and in 1457 built their first hall in Fenchurch street. This has been rebuilt twice since then, once in 1587 and again in 1750, but during the war it was so badly damaged by bombs dropped from German airplanes in 1917 that it was decided to build an entirely new hall on a new site.

BANQUET room of Ironmongers' hall. Fine examples of Waterford glass were rescued from the German air raid in 1917

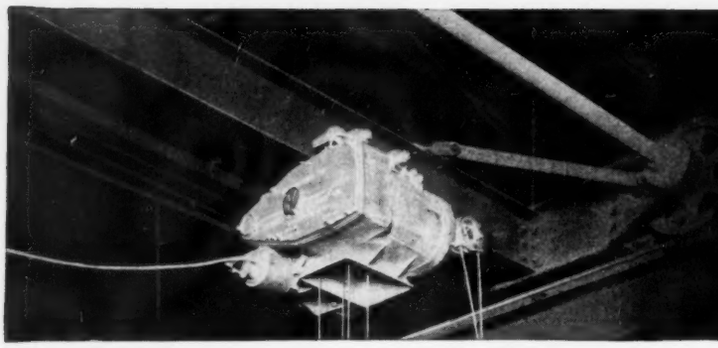
ENTRANCE to Ironmongers' hall. Every piece in this building was made in the craftsman style

Has Unexpected Beauty

The guild is now housed in a Tudor building in Shaftsbury place. Those who find it after some difficulty are astounded at its beauty, unexpectedly peaceful after the noise and bustle of the city streets. The architect is Sydney Tatchell, F. R. I. B. A., surveyor to the guild.

On one side of the main entrance is a figure of St. Lawrence, the patron saint of the guild, and on the other the figure of St. Elegius, patron saint of smiths and other artificers in metal. In the court room there is a carved frieze with masques symbolizing law, justice, the smith, the armourer, the chainmaker, the candlestick maker and other representatives of early guilds.

Over the master's chair in the banqueting hall is the founder's window, displaying the devices of the first master who received a charter from Edward IV in 1463. At the very top of the arms of King George V, commemorating the fact that the supporters to the guild's arms were in 1924 confirmed by his majesty by letters patent.



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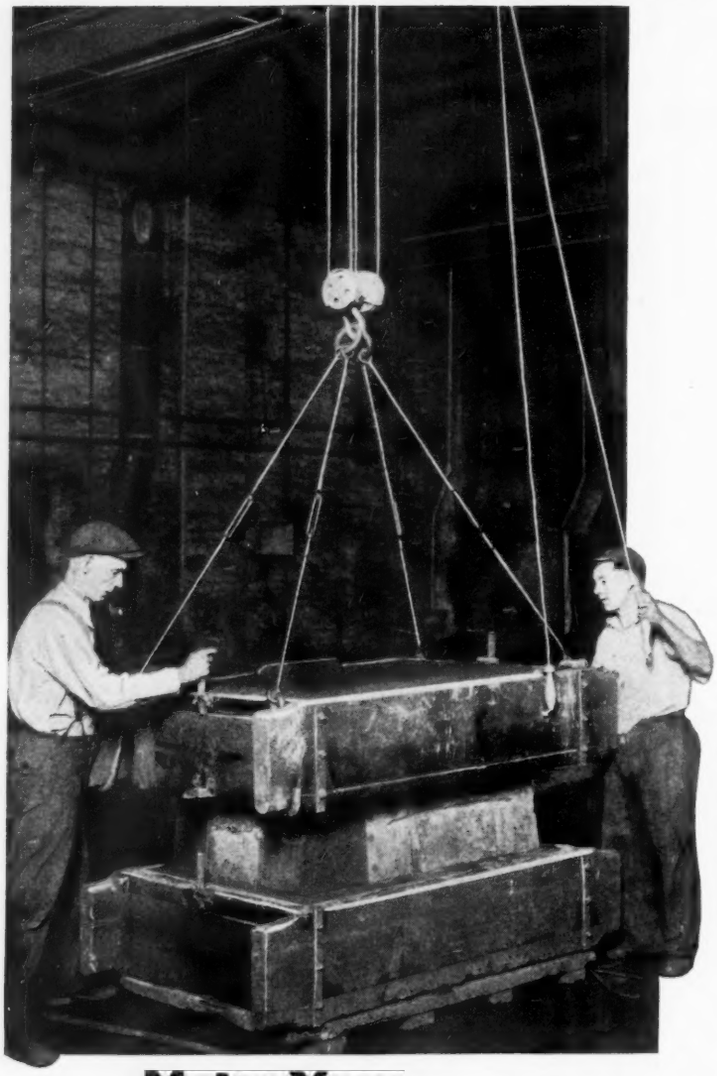

The new Robbins & Myers Two-Speed Hoist will delight the heart of every foundryman. Its slow, creeping first speed lifts and lowers with all the gentleness of a falling leaf—*always under positive control.* There is no abrupt starting, no jarring stops, no vibration to shake sand from the flask—insuring every casting being clean, smooth and sound. Fast second speed keeps operations on schedule.

Many New Features

Use of a special R & M two-speed hoist motor in place of usual slip ring type gives this exceptionally smooth performance. Other features are low headroom; flexible trolleys, adjustable to many sizes of I-beams; Hyatt Roller Bearings throughout; alloy steel gears and pinions, and one-piece cast frame of Aremite (twice tensile strength of gray iron).

Sturdy, simple construction, perfected by R & M's 30 years' experience in building precision machinery, guarantees full-time operation and bed-rock maintenance costs. Their saving in time, labor, and material makes R & M Hoists the most profitable foundry equipment. Write for data and prices.

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HAND AND ELECTRIC HOISTS AND CRANES, MOTORS, GENERATORS AND FANS

High-Frequency Furnace Produces Pure Steel

BY DR. RUDOLF HOHAGE and BERNARD MATUSCHKA
Schoeller-Bleckmann Steel Works, Vienna

SCIENCE always has endeavored to comply with the ever increasing demands of industry, through invention and unremitting research work. Whenever existing equipment no longer has answered the needs of the era, science has developed a new principle whose industrial utilization opened up entirely new prospects. The high-frequency crucible furnace is one such epoch-making creation of recent times.

Until a few years ago only one process was suitable for making steel of the highest quality. This was the crucible steel process, which was carried out either in a coke or gas-fired crucible furnace using charges of Swedish iron, Lancashire iron, wrought iron, etc., as well as choice scrap from fabrication, and pure alloy additions. This charge was placed either in a clay crucible and melted in a coke-filled shaft furnace, used mainly in England today, or put in a graphite crucible and melted in a gas crucible furnace, widely used on the Continent.

Atmosphere Is Oxidizing

The gas-fired crucible furnace is heated the same as the Siemens-Martin type furnace, by burning a preheated air-gas mixture in suitable chambers. The gas flame, which burns with as much as 20 per cent excess air, surrounds and heats the crucible, so that the space containing the crucibles is filled with an oxidizing atmosphere. To protect the crucible contents, graphite crucibles are used, the carbon content of which is partly consumed by the action of the gases during the process. Since this makes the crucibles porous, it is not possible to prevent entirely the contact of air as well as the oxide skin of the charge and the penetration of gases through the metal, so that the steel within the crucibles melts under slightly oxidizing conditions. Any additional contact with oxygen is prevented by using a good covering of slag. After the melting period, the so-called crucible-reaction or automatic deoxidation of the steel takes place. The silicon from the crucible walls, in an extremely reactive state, enters the steel and has a strong deoxidizing action on it. The excellent quality of crucible steels is attributed to this self-acting deoxidation together with the pure materials charged.

Naturally, such a delicate process involves high manufacturing costs. The desire to reduce costs and still maintain quality led to the development of the electric steel process. In the last ten years, the electric steel process in both its forms—the arc and induction furnaces—has been tested in actual practical operation and has proved most suitable for making high quality steels.

In the induction or low-frequency furnace a current of only 15 or 25 cycles is applied to the furnace and transferred by induction to the steel in the melting channel. In order that a strong heating current be induced in this melting channel, a closed current circuit must be present. Therefore, this furnace is suited mainly for refining fluid charges from the Siemens-Martin type furnace. Furthermore, the cross section of the channel must be kept as small as possible so that rapid heating is obtained. This leads to small melting hearths which are not easily accessible, and the metallurgical processes are made difficult since the slag is heated only by contact with the metal. An advantage of this system is found in the rotating circulation or pinch effect created by the current, which produces a thorough mixing of the steel bath. However, this mixing must not be too strong; otherwise refractory material from the channel walls will enter the steel.

The arc furnace is used most extensively today. Current is obtained in the furnace by means of a high tension-low tension transformer, the high furnace current being carried by heavy copper busbars to the three electrodes, which form arcs with the solid or fluid metal, melting the charge rapidly. After melting, the arcs heat the slag which then gives off heat to the steel bath. The slag, therefore, is always hotter than the steel, so that all metallurgical work is easily and completely carried out. The arc furnace is particularly suited for making good deoxidized steel of any desired composition. No electric mixing action occurs in this type of furnace, and the mixing must be done by introduction of a substance to produce boiling or by mechanical stirring.

Seek Cleaner Steel

In spite of the high degree of development attained with the electric steel process in recent years, a number of weaknesses remain and many plants today still prefer the expensive crucible steel for its purity and safety. The problem of manufacturing crucible steel electrically recently has been solved by the high-frequency crucible furnace. One of the first European installations of this type of furnace was at the plant of Schoeller-Bleckmann Steel Works, Vienna, Austria. The melting crucible, which is made of acid refractory, has the high-frequency coil wound about it; this coil carries current which changes its direction 3000 times per second. This current is generated in a separate high-frequency converter and a battery of electric condensers is connected in the furnace circuit to take up the current not used in the furnace and which does not have to flow back to the generator. By means of this ingenious arrangement it is possible to attain such high efficiencies as to permit the process to compete with other steel manufacturing methods.

The high-frequency current flowing in the furnace coil, generates a rapidly pulsating magnetic field in the interior of the crucible, which in turn induces strong eddy currents in the charge so that in slightly over 60 minutes a charge of 300 kilograms or 661 pounds is melted. Charges of Swedish iron, Lancashire iron, wrought iron, sponge iron and pure manufacturing scrap, together with the best alloying metals, are melted down in the high-frequency furnace in comparatively short time with all air excluded and

A HIGH degree of steel refinement is possible by use of the high-frequency crucible furnace. Thorough mixing of alloying elements and elimination of impurities are other advantages of this electric melting method. The accompanying article describes a European adaptation of this comparatively new process for making high quality steels, and is translated from comment appearing in Schoeller-Bleckmann News, official organ of the Schoeller-Bleckmann Steel Works, Vienna, Austria.

in the absence of detrimental gases, and then subjected to the excellent deoxidizing action of the highly heated crucible walls such as takes place in the gas-fired crucible furnace. The so-called crucible reaction sets in due to the introduction of silicon from the crucible walls into the liquid steel, which already has been attributed as the most important action on the quality of steel in the old crucible practice.

In the high-frequency furnace, however, still further favorable conditions are present. The magnetic fields set up in the steel bath by the high-frequency currents create a circulation of the steel producing an uninterrupted, slow, automatic mixing. By means of this circulation the steel is passed automatically over the highly heated crucible walls and benefited by the deoxidizing effect of crucible reaction. At the same time any small, free slag particles and gas bubbles are led to the top and removed from the steel, due to this slow and steady circulation which is not nearly so pronounced as the rotating circulation in the low-frequency induction furnace. Therefore, this process results in steel especially free of slag impurities and also affords the necessary homogeneity in making highly alloyed tungsten, chrome and vanadium steels, and the even distribution of large amounts of alloy additions, which has a profound influence on the quality of the steel.

Purity Is of High Degree

High-frequency crucible steel differs from other steels in that its purity is of a high order, even exceeding that of steel produced in the gas-fired crucible furnace. Just how this purity affects the quality is indicated by the fact that every particle of inclusion or slag breaks down the metallic cohesion and thereby affects, for instance, quality of polish. These inclusions also reduce the resistance of the metal to chemical action, since acids and other chemicals attack the small slag particles and thereby destroy the polish. Such inclusions are especially significant in steel for tools which are to be hardened. Every hardening process is associated with a change in volume, it being known that a hardened piece of steel has a lower specific gravity than the same steel in the annealed condition. As a result of the volume change in hardening, every piece of hardened steel contains strains, and if the steel is permeated with many inclusions, these inclusions do not take part in the hardening process since they are particles of an entirely different nature. The spaces in which these inclusions are found consequently will introduce disturbances in the condition of strain which will be increasingly greater and more detrimental as the number of such inclusions present.

From this brief consideration, it may be seen just how important it is to have a steel of the greatest possible purity for certain purposes. An illustration is furnished by iron drawing steels, in which it is essential that the drawing hole always become smaller after hardening, so that when the drawing hole has been worked out, the original hole size is obtained only by hardening. The greater the purity of the steel, the more hardenings it will withstand before it breaks, and therefore the more economical will be the part in which the steel is used.

Two Hardness Tests

The sensitivity of a steel to hardening may be tested by two methods, the repeated hardening test and the interval hardening test. In the first method, a cube of steel is ground smooth and then hardened repeatedly until a fine crack occurs.

The second method consists of cutting a forged, normalized rod—the normalizing is necessary to compensate for any errors in forging—into pieces and then hardening them in 20-degree steps from 700 to 900 degrees Cent. From the fractures, it may then be determined readily whether or not the steel is free from inclusions.

The pure tungsten and low-chromium alloy steels, so-called diamond steels, having a tungsten content between 4 and 6 per cent with about 1.4 per cent carbon, have the undesirable property of segregating so-called tungsten subcarbide which later on does not take part in the hardening process, thereby reducing the otherwise inherent great hardness of these steels and making them sensitive to hardening. This undesirable property is not present in high-frequency crucible steel, as definitely determined by exhaustive research.

Inclusions in the steel have a marked influence on the carbide distribution in tool steels having a high carbide content. The greater the purity of the steel the finer will be the carbide distribution, and therefore a better tool will result. Furthermore, the carbide distribution is strongly influenced by the pouring temperature. Here the high-frequency furnace offers further advantages. Any desired pouring temperature is obtainable and easily controlled; the steel may be cooled by disconnecting the current, or it may be heated to a higher temperature.

Bucyrus-Erie Co., South Milwaukee, Wis., has taken an order from Schneider & Co., Paris, France, for a dipper dredge costing $250,000 to remove a breakwater at Havre.

R. S. MacPherran Receives Whiting Gold Medal

Ralph S. MacPherran, chief chemist, Allis-Chalmers Mfg. Co., Milwaukee, eminent metallurgist in the field of cast iron, has been awarded the J. H. Whiting gold medal of the American Foundrymen's association for his many contributions to the foundry industry. The medal is one of four awards made by the foundrymen's association for the purpose of encouraging and stimulating meritorious achievements in the industry.

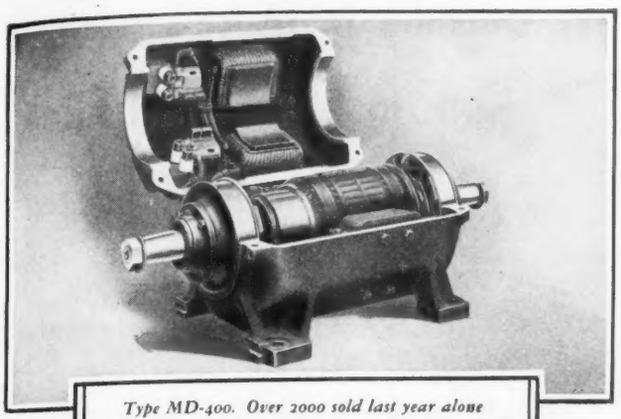
Mr. MacPherran, for many years a prominent and active contributor to committee work of the American Foundrymen's association and the American Society for Testing Materials, has been identified with the iron and steel industry for nearly 30 years. He received his technical education at the universities of Wisconsin and Michigan. Subsequently he became associated with the Illinois Steel Co. at the Joliet and South Chicago, Ill., works, and then joined the organization of the former E. P. Allis Co. of Milwaukee, in 1895. Later he spent one year with the J. I. Case Threshing Machine Co., Racine, Wis., returning to the Allis-Chalmers Mfg. Co.

Mr. MacPherran is well known for his numerous contributions to the metallurgy of cast iron and steel before meetings of various technical associations, as well as to the press.

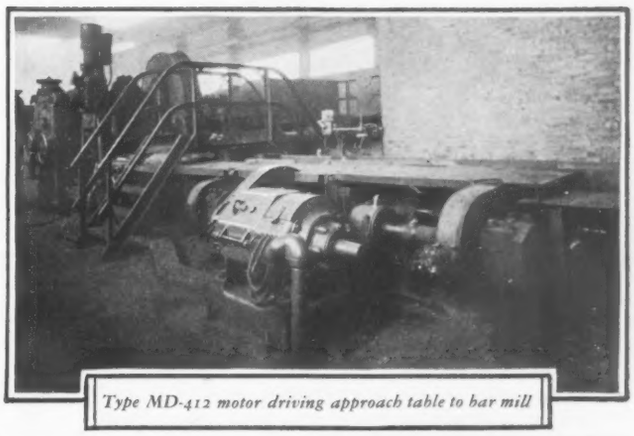
Unusual Interest Shown in Arc Welding Contest

Requests for further information concerning the second arc welding prize competition sponsored by the Lincoln Electric Co., Cleveland, indicates wide-spread interest in this year's competition. A large number of entries are expected. The requests cover almost all industries, and are distributed over a wide range of industrial positions. Queries were received from 17 foreign countries, including Japan and China in Asia, almost all of the European countries, Australia, Union of South Africa, and several countries of the Western hemisphere.

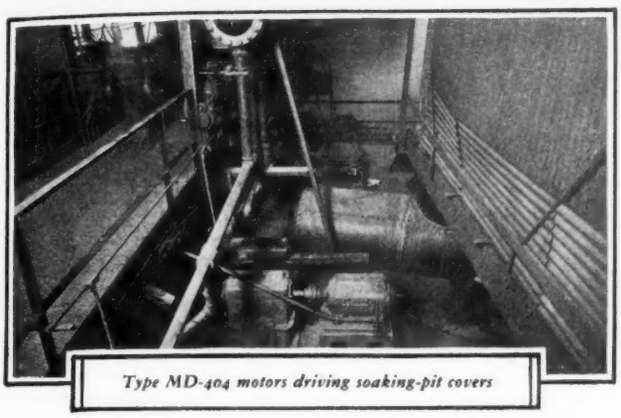
The competition, announced approximately six weeks ago, is designed to stimulate designers and engineers in every line of industry to consider the application of arc welding to the manufacture of their own product, and carries 41 prizes totaling $17,500. The contest closes Oct. 1, 1931, and is open to anyone except employes of the sponsoring company. The prizes will be awarded to the persons who submit the best papers describing the redesign of any product or the design of any proposed product to be fabricated by the arc welding process.



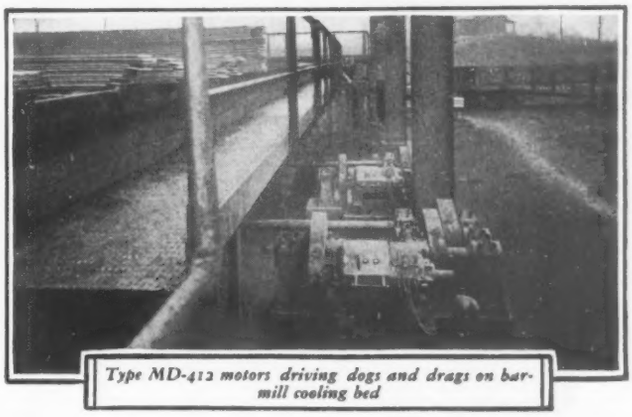
Type MD-400. Over 2000 sold last year alone



Type MD-412 motor driving approach table to bar mill



Type MD-404 motors driving soaking-pit covers



Type MD-412 motors driving dogs and drags on bar-mill cooling bed

TYPE MD-400

The Steel-Mill Engineer's Motor!

Here is the steel-mill engineer's motor—designed to meet the dimension and rating specifications of the A.I. & S.E. E.—as strong, as simple, as accessible as you've ever seen a motor built—conservatively rated—capable of standing the gaff of the toughest service on your mill auxiliaries, cranes, and hoists. ¶In the three years since this motor was introduced, over four thousand have been sold. In 1929 alone, as the motor's performance records became better known, more than two thousand were sold. The list of users of Type MD-400 reads like the Who's Who of the steel industry. Ask your nearest G-E office to send you descriptive literature—and to show you neighboring installations.

Motorized Power
—fitted to every need

233-8

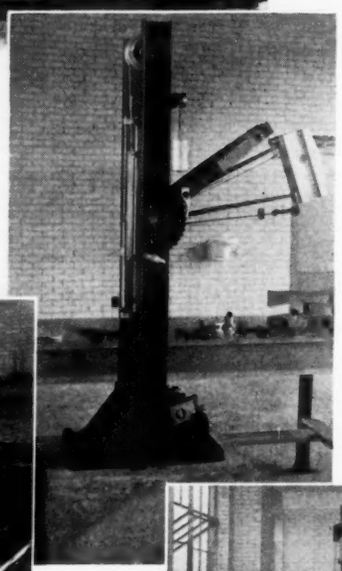
GENERAL ELECTRIC

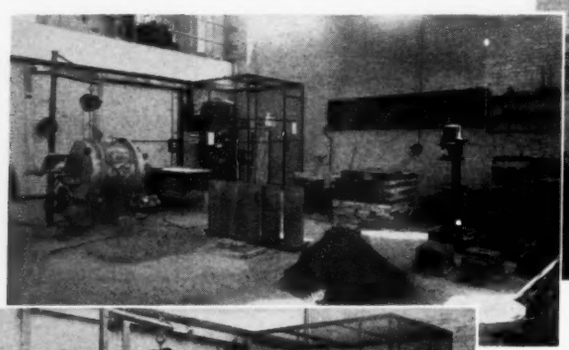
SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

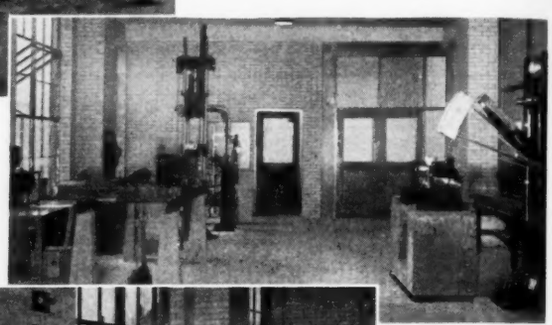
Battelle Institute Engaged in Metal and Fuel Research Work

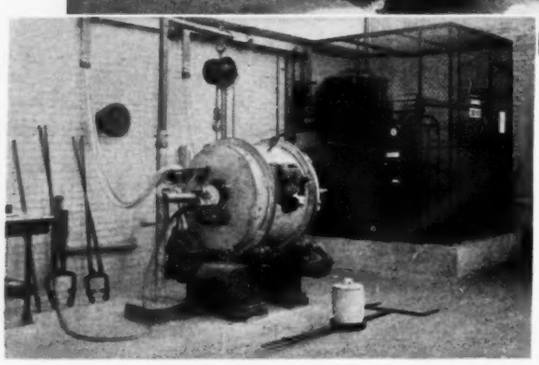
AT PRESENT a staff of approximately 65 is maintained although facilities will accommodate 200 research workers. Several views of the institute building are shown above and below. These include the experimental foundry, the physical testing laboratory and equipment, and at the bottom of the page, one of the laboratories devoted to research in fuels.

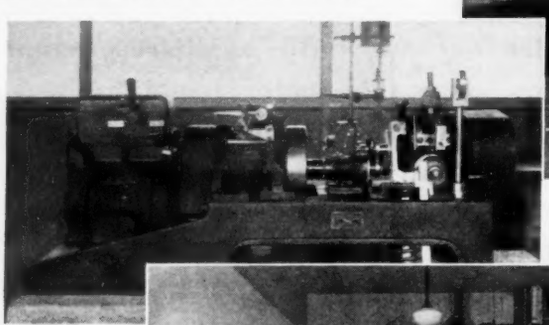
DEDICATED to industrial research in metallurgy and fuels, and constructed, equipped, staffed and endowed through the generosity of the late Gordon Battelle and his mother, Battelle Memorial institute, Columbus, O., has completed its first year of service. Work of the institute is carried out on a nonprofit basis for such individuals or organizations desiring to sponsor any type of original research, results being the full property of the sponsor.

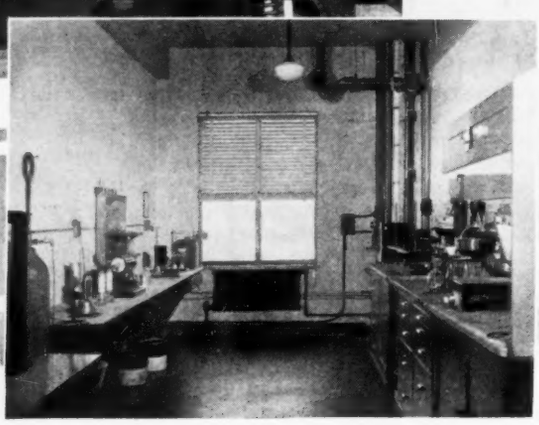












Interest Runs High at Ninth Annual Power Show

EXHIBITORS at the ninth annual power show were practically unanimous in reporting inquiry and actual orders in greater volume than at last year's show. Some manufacturers who have exhibited at this show for four or five years have come to regard the response of visitors as a barometer of business. Although orders were received in surprisingly good volume at the 1929 power show, following a serious market slump, this year show bookings by many large exhibitors exceeded by a considerable margin the business placed with these interests during the show period last year.

¶ The order for the largest single piece of equipment was that placed by Brooklyn Edison Co., Brooklyn, for an American Engineering Co. automatic stoker rated at 160,000 horsepower, based on boiler capacity, an installation which, it is said, will be the largest in the United States.

¶ The tenth National Exposition of Power & Mechanical Engineering, as the show is termed, will be held in New York, Dec. 5-10, 1932, according to I. E. Moultrop, Edison Electric Illuminating Co., Boston, and chairman of the power show advisory committee. This means a departure from the present system of scheduling the shows annually.

INTEREST in the annual power show held in conjunction with the American Society of Mechanical Engineers at Grand Central Palace, New York, continues to increase each succeeding year and last week at the ninth annual exposition the crowds were so large at times that many experienced difficulty in seeing the displays. While exhibits in general followed closely those of last year, an improvement in presentation was noticeable. More equipment was shown in actual operation this year and the booths themselves were lighted and decorated more attractively than ever before.

As in previous years the exhibits were widely diversified. Major groups were power station equipment, refractories, valves and fittings, gears and transmission machinery. More space was given this year to displays of materials handling equipment.

More heavy machinery and equipment was in evidence and one exhibit, that of the American Engineering Co., New York, was the largest in the history of the show. This consisted of a full size automatic stoker erected in the rotunda on the first floor and extending up to the third floor.

Attendance was appreciably larger than last year, totaling over 130,000, including representatives from nearly every foreign country. The representation from technical schools and universities was heavy as in former years, bearing out the claim that the show is more and more proving to be an important educational institution.

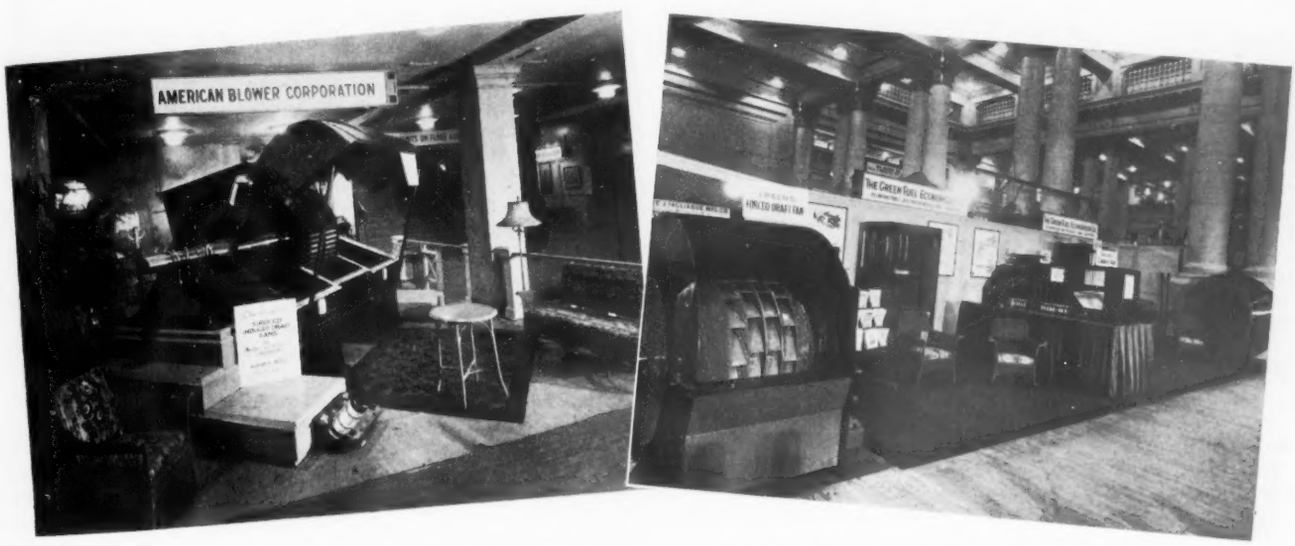
Nash Engineering Co., South Norwalk, Conn., exhibited large pumps and compressors in operation. A new De La Vergne-Morris diesel engine, for which unusual economy of operation was claimed, drew much attention. General Electric Co., Schenectady, N. Y., as usual had a booth which attracted many. A feature of popular interest was a demonstration of thyratron control, the new method of controlling operations by vacuum tubes. Another example of unique control was shown in one booth where an operator opened or closed a large motor-operated valve by sounding a certain musical note. Link-Belt Co., Chicago, and Morse Chain Co., Ithaca, N. Y., had attractive booths showing novel chain drive applications. Other chain manufacturers exhibiting included Baldwin-Duckworth Chain Corp., Worcester, Mass., and Diamond Chain & Mfg. Co., Indianapolis.

Gears Are Demonstrated

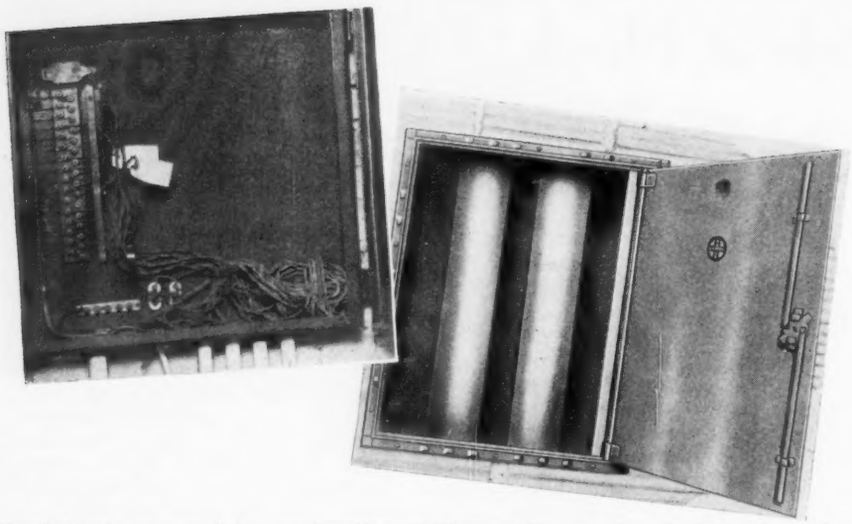
The use of gears of various types was demonstrated by Boston Gear Works Sales Co., Boston; Charles Bond Co. and Simplex Valve & Meter Co., Philadelphia; Silent Hoist, Winch & Crane Co., Brooklyn; Foote Bros. Gear & Machine Co., Chicago; and Perkins Machine & Gear Co., Springfield, Mass.

Exhibits of valves and fittings were more numerous this year. Represented among these were: Bailey Meter Co., Cleveland; Schuette & Koerting Co., Philadelphia; Northern Equipment Co., Erie, Pa.; Bristol Co., Waterbury, Conn.; Crosby Steam Gage & Valve Co., Boston; Parker Appliance Co., Cleveland; Fulton Sylphon Co., Knoxville, Tenn.; H. Belfield Co., Philadelphia; Henry Vogt Machine Co., Louisville, Ky.; and Fairbanks Co., New York.

Railroads of the United States in 1929 spent $437,840,000 for iron and steel products.



Two of the exhibits at the ninth annual power show, held in Grand Central Palace, New York



Steel sheets are used in construction of these units, one for electric wires, the other for pipe and valves

Large Uses of Steel in Small Ways

180th Article ◆ Access Units

WITH the maze of electric wiring, plumbing and ventilating lines that enter the construction of the modern apartment, hotel and office building, it is not surprising that access units are being installed in greatly increasing number. Practically all these units are steel.

Designed to provide easy access to air shafts, pipes, valves, switches and other fixtures lying within the walls, these units, run into the hundreds in most new commercial buildings. More than 1800 are being installed in the Empire State building, the tallest in the world, now under construction in New York.

3500 Tons Used Annually

Based on the metal requirements of some of the leading manufacturers, it appears that approximately 3000 to 3500 tons of steel is consumed annually in the production of access units. These units come in several standard sizes, with panels ranging from 8 x 10 inches to 24 x 36 inches and they weigh 4 to 35 pounds The tendency has been toward larger units, with the average size now used in hotels and commercial buildings taking more than 20 pounds.

Steel has been used in the manufacture of these units for 10 or 12 years, but it has only been within the past three or four years that any real effort has been made to produce them in standard sizes, and even today a large number are being made to special specifications. Manufacturers of the standard sizes are having to do considerable educational work among the architects. That they are making good progress is indicated by the increasing demands for the standard sizes, demands that have increased in some instances more than 50 per cent in the last two years.

Many of the larger buildings now under erection are installing the standard units.

The panels of these units, as produced by one leading manufacturer, are of cold-rolled stretcher-leveled sheets, either ⅛-inch of ¼-inch in thickness. The frames are 18 gage, the angles being welded.

To prevent dirt and dust from coming into the room, the units are designed so that the panel closes firmly on the inside sill. The edge of the frame and door panel are flush with the plaster, and the unit can be made inconspicuous by being painted the same color as the wall. Incidentally, before being installed the units are given a thorough coating of rust-resistant paint.

Plan Production Meeting

Production problems and activity are to be discussed at a special session of the Society of Automotive Engineers at the annual meeting of the soceity at Book-Cadillac hotel, Detroit, Jan. 19-23. The principal subject to be presented is "Controlling Factors in Machine-Tool Obsolescence." L. A. Blackburn, Oakland Motor Car Co., Pontiac, Mich., J. W. Brussel, Timken Detroit Axle Co., Detroit, and A. R. Fors, Continental Motors Corp., Detroit, will hold a joint discussion of this problem. Plans are underway for the holding of a spring production meeting to be held in April, 1931.

Arranging Technical Program for Western Metal Show

Plans are shaping up for the second National Western Metal congress and metal and machinery exposition, to be held in civic auditorium, San Francisco, Feb. 16-20. W. H. Eisenman, secretary, American Society for Steel Treating, which is sponsoring the congress and exposition, has opened headquarters in San Francisco and is arranging dates for the various technical sessions.

Two half-day sessions will be held by the American Welding society. Speakers at these sessions will include M. C. Smith, Stoody Co., Whittier, Calif., who will discuss welding of alloy overlays; a second speaker from the same company who will talk on coated welding rods and coated electrodes; W. N. Dunlap, Aluminum Research Laboratories, Aluminum Co. of America, Pittsburgh, who will comment on welding aluminum and its alloys; J. C. Hodge, metallurgist, Babcock & Wilcox Co., Beaver Falls, Pa., speaking on fusion welding; and a representative from the Linde Air Products Co., New York, who will present a paper on acetylene welding.

Features of the sessions of the American Chemical society, also participating in the program, will be addresses by F. N. Speller, National Tube Co., Pittsburgh, reviewing corrosion determinations for 1930; and M. A. Grossmann, Republic Steel Corp., Canton, O., discussing chromium and chrome-nickel steels.

The meeting and exhibition are expected to eclipse all records of the first congress, held in 1929 in Los Angeles. Other societies participating in the event are: American Society for Testing Materials; American Institute of Electrical Engineers; American Institute of Mining and Metallurgical Engineers and Institute of Metals; American Society of Mechanical Engineers; National Association of Purchasing Agents; Pacific Coast Electrical association; Pacific Coast Gas association; Society of Automotive Engineers; and National Association of Power Engineers.

American Bosch Magneto Corp. is increasing production at its Springfield, Mass., plant to supply equipment for implements and tractors for Russia.

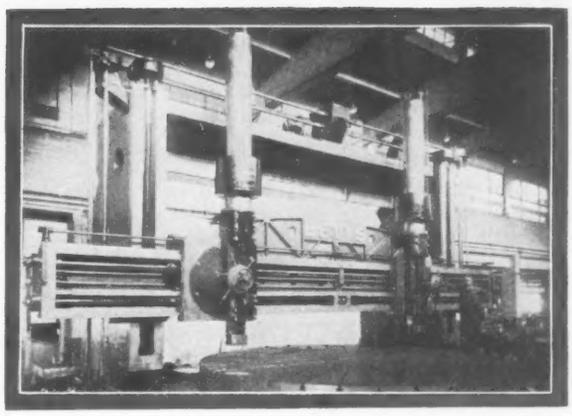
THAT innate ability to keep going at top speed in the face of tough opposition . . .stamina to carry on through the tight spots . . . the will to do . . . punch . . . drive—that's the stuff that makes winning football teams.

Likewise, the ability to keep going at top speed . . . reserve power for peak loads . . . punch . . . drive . . . dependability—these are the qualities that have made Westinghouse motor drives the preferred choice of industry.

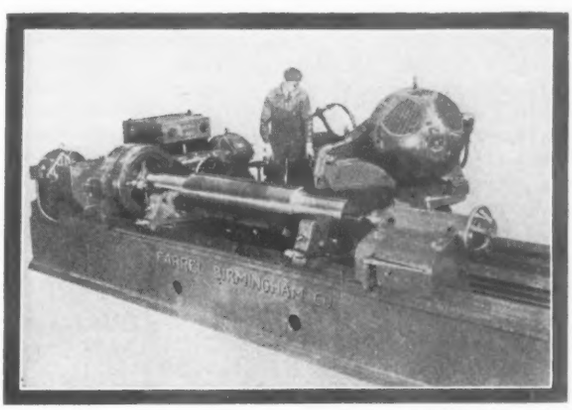
Such features as dual-protected windings . . . directed ventilation . . . no hidden hot spots . . . sealed-sleeve bearings . . . and control units matched to the motors . . . are winning for Westinghouse motor drives a growing preference among experienced buyers.

For every power application, Westinghouse is equipped to supply the right motor . . . the right control . . . and, if the application requires, gear units or Cog-Belt drives in the right combination.

Westinghouse engineers will be pleased to work with you in the application of Westinghouse motor drives in your plant. Call our nearest office.



Betts 25-foot vertical boring mill. There is a Westinghouse SK Motor mounted on top of this machine; the main Westinghouse SK driving Motors are below the floor level.



This Farrell Birmingham roll grinder is powered by seven Westinghouse SK Motors. There are more Westinghouse SK Motors in use today than any other type of direct current general purpose motor.

Service, prompt and efficient, by a coast-to-coast chain of well-equipped shops

Westinghouse

T 31590

TUNE IN THE WESTINGHOUSE SALUTE OVER THE N. B. C. NATION-WIDE NETWORK EVERY TUESDAY EVENING.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Bearings

Bearing clearances and composition of bearing metals, considered by J. D. Lloyd, in Machinery, December 1930, *p.* 284, 2 *pp.*

The journal and the bearing preferably should be of dissimilar metals, the bearing surface being made of a softer metal than the journal. Thus any wear that takes place will be confined principally to the bearing surface, which is more economical to replace than the journal. For unlined bearings, where speeds and pressures are fairly high, a phosphor-bronze composed of 80 per cent copper, 10 per cent lead, and 10 per cent tin, and deoxidized with phosphorus is used widely. From the standpoint of low friction, lead, due to its soft yielding properties, is one of the most satisfactory of bearing metals. However, it always must be combined with some other metal to obtain the required hardness. All bearings should have sufficient clearance to prevent binding or freezing. The diameter of the journal, the coefficient of expansion of the metal composing it, and the probable range of temperature under running conditions are the principal factors that determine the amount of clearance required for a bearing.

—STEEL 12-11-30

Tungsten Carbide Dies

Discussion of work involved in a development program instituted in an effort to adapt tungsten carbide dies more completely in mills drawing bar stock, tubing and wire, in the November 1930, *issue of Carboloy, p.* 14, 2 *pp.*, 1 *illust.*

This work is being carried out in plants of manufacturers co-operating with the Carboloy Co. Inc., Detroit, and covers the shapes and angles of approach, finish required for maximum life, type of die material best suited to drawing various materials, lubrication materials, methods giving longest die life and desired finish on the wire, draw pull or power required with various die shapes, materials and lubricants, and greater reductions possible with tungsten carbide dies. After extensive tests, 93 per cent of 68 dies tested, including tungsten carbide, chilled iron and steel dies, were found to have the same angle of approach throughout the length of the die where the wire had been bearing, despite the fact that none of the dies measured had been made originally with the angle of approach found after the tests.

—STEEL 12-11-30

MISCELLANEOUS:

Crane Specifications

Electric overhead traveling crane specifications, presented in Iron and Steel Engineer, November 1930, *p.* 545, 14 *pp.*

The body of this specification is intended to cover all types of cranes 5 tons or over for mill service in general, and regarding safety features. Forty-eight items are covered. Special information sheets accompany the text and are intended to adapt the specification to all special requirements and conditions which may present themselves in various plants where cranes are used.

—STEEL 12-11-30

FABRICATION:

Boiler Tube Material

Quality of material suitable for high-pressure water-tube boilers, discussed by S. F. Dorey, in Metallurgia, November 1930, *p.* 31, 3½ *pp.*, 3 *illusts.*

All water tubes of mild steel should be made of homogeneous material having a slow-sulphur content equally distributed throughout the material, and to ensure that this is the case, sulphur prints should be taken from the original ingots or tube billets. For boiler tubes it is essential that the addition of alloying elements should not interfere with the mechanical properties of the material at ambient temperatures, that is, the material must be capable of being bent and expanded cold, and for certain types of superheater tubes it must be possible to weld the material. In some cases where it is necessary to use special alloy steels the cost can be reduced by dividing the superheater into two sections, consisting of mild steel tubes in which steam can be raised to a temperature of about 750 to 850 degress Fahr. and the final superheating section consisting of the special alloy tubing in which the steam temperature is increased further to the required amount. In order to reduce the cost and still have a greater factor of safety at high temperatures than that given by mild steels, attention has been devoted to the effect of small quantities of molybdenum and copper to low-carbon steels.

—STEEL 12-11-30

PRODUCTION:

Cupola Melting

Important variables encountered in the successful operation of the cupola, discussed by R. W. Watson, in The Foundry, Dec. 1, 1930, *p.* 85, 1¾ *pp.*

Every cupola operator should know how much wind he is blowing every minute during the heat, and the pressure. With the volume blown comes the knowledge of the amount of coke necessary to use with the penetration and whether this coke is being burned to secure the best temperature. With a given volume of air the dimensions of the tuyeres may be determined by the penetration of the blast. The manner in which the bed is burned marks the difference between a good and poor heat. The material charged into a cupola should be of known analysis especially in these days of alloys in iron and steel. Metal charges always should be thrown to the outside. If possible an uncovered portion of the coke should show in the middle. A heavy bed charge of iron is not recommended, because it cuts down the coke bed. Coke is the essential ingredient in good cupola practice and should be selected more for its physical qualities and its rate of burning than for chemical analysis.

—STEEL 12-11-30

Machine Tools and Plant Equipment

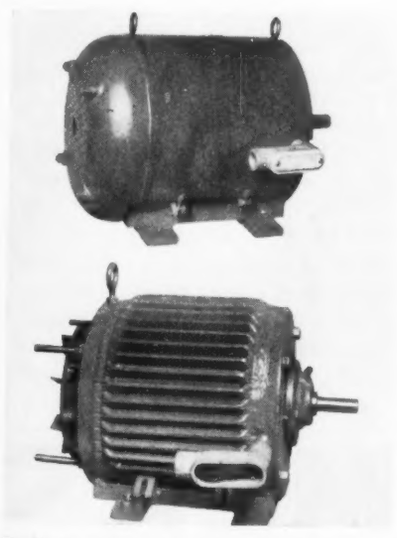
«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Corrugated Cooling Shell Aids Motor Operation

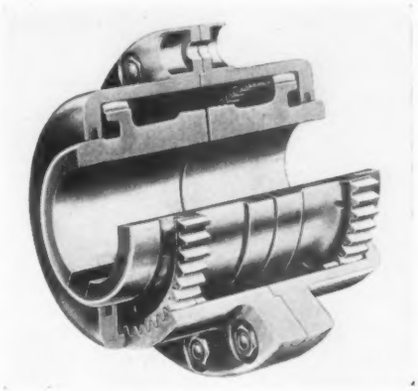
Lincoln Electric Co., Cleveland, is marketing a totally enclosed, fan cooled, induction motor which has a corrugated radiating surface that keeps the rise of temperature of the motor considerably below the allowable rise for motors of this type. The accompanying illustration shows the radiating surface with cover removed and also the motor assembled with cover in place.

The large radiating surface is obtained by complete enclosure of the sides of the motor with a deeply corrugated sheet of corrosion-resisting metal. This conducts the heat created within the motor to its outer radiating surface which is constantly cooled by a draft of outside air.

The air contained within the completely sealed frame is constantly circulated by a fan welded to the rotor. This fan keeps the inside air in continuous contact with the cooling surface. The outside air which draws the heat from the radiating surface is forced over the exterior of the corrugated shell by a large fan attached to the motor shaft, the air being drawn in at one end of the motor and hot air expelled at the other end.



Radiating surfaces of cooling shell are shown below. The motor with case in place is above



Coupling will compensate for angular and off-set misalignment

Flexible Coupling Adjusts Itself Automatically

Poole Engineering & Machine Co., Baltimore, Md., has developed a medium-duty type flexible coupling which adjusts itself to conditions, leaving its members free to float without causing strain to bearings, shafts, or other parts. The coupling, shown in the accompanying illustration, will compensate for angular, as well as offset misalignment. Both sleeves and hubs are machined from solid bars of high-grade, high-carbon steel. Sleeve members and end plates are integral. The coupling is fully lubricated, oil tight, dust and moisture proof. Construction is of the geared type. It is particularly adaptable to drives such as fans, small compressors, small generators, light or medium-duty machinery, etc.

◆

Three-Pole Magnet Handles Rails Up to 130-Pounds

Ohio Electric Mfg. Co., Cleveland, has designed a three-pole magnet for lifting and handling single lengths of steel rails. The magnet, which weighs 935 pounds and requires about 1.5 kilowatts direct current for operation, is especially useful in distributing rails along the right of way and placing them in position later by the maintenance train. It will lift a 130-pound rail by any point it touches, and, as it aligns itself on the rail, requires no extra attendant.

Automatic Cutout Prevents Furnace Overheating

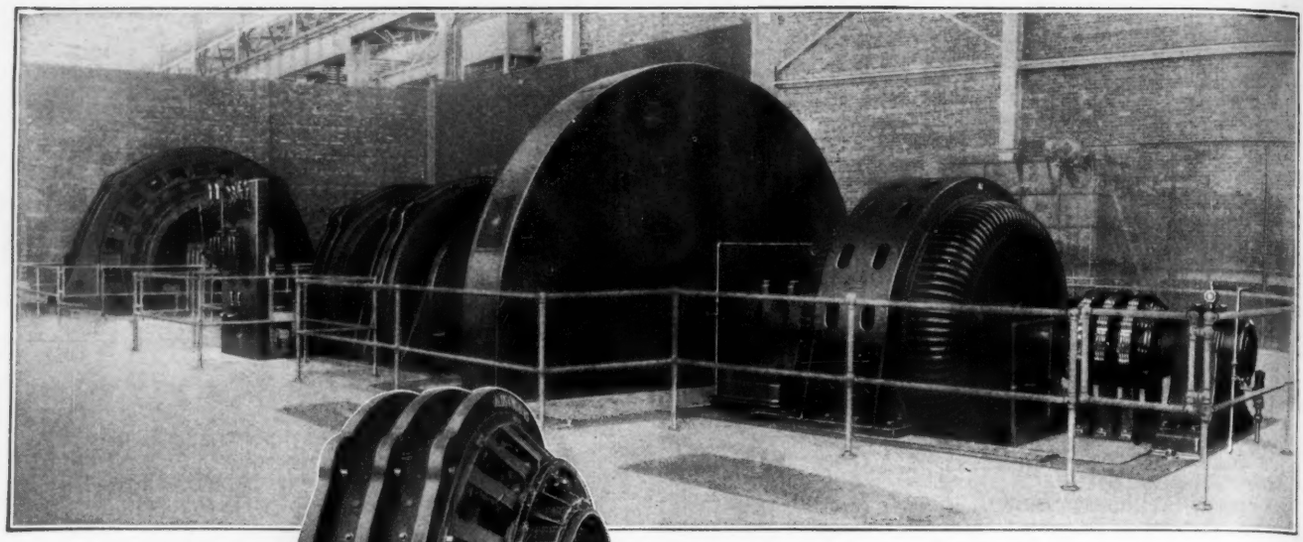
Hevi Duty Electric Co., Milwaukee, has developed an automatic excess temperature cutout which can be applied to any type of furnace to guard the work or furnace from damage due to overheating The instrument, shown in the accompanying illustration, responds to a thermocouple located in the furnace chamber which through a thermal cutout actuates a relay which is part of the furnace control system. Adjustable controls are provided so that the instrument can be set for any desired temperature. It can be calibrated for any thermocouple and used for protection purposes in connection with temperatures up to 3000 degrees Fahr. When the relay is actuated, the source of heat is cut off and a light or an alarm bell is turned on to attract the attention of the operator.

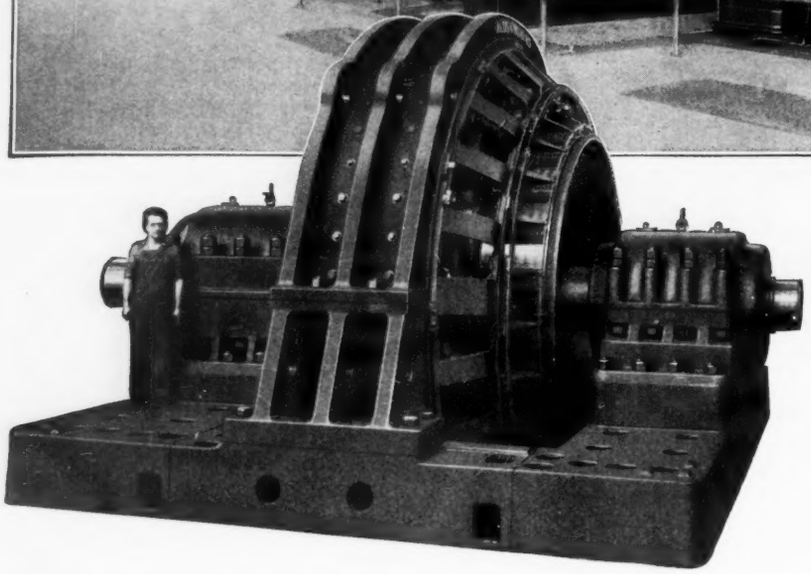
◆

Production Vise Provides Quick, Positive Pressure

Wedge-Lock Tool Co., Chicago, has added to its line of production equipment a vise for use on milling machines and drill presses. This vise,

Excess temperature cut-out protects furnaces against overheating





Main roll drive at Massena Mill of Aluminum Company of America, consisting of Allis-Chalmers 5000 h.p. reversing motor, 4000 k.w. fly-wheel motor-generator set, and liquid controller. To the left is shown a close-up of the reversing motor.

Bulletin No. 1147 illustrates many other Allis-Chalmers main roll drives and contains a complete list of installations with ratings and their applications. Write for your copy, today.

Reversing Blooming Mill Drive ... with improved speed control

THE Massena Mill of the United States Aluminum Company is one of the latest and best examples of a completely electrified rolling mill. All major operations including remelting, casting, and rolling are performed through the medium of electric power.

The blooming mill, which is the largest aluminum rolling mill in the world, is driven by a 5000 h.p., 0-50-120 r.p.m., adjustable speed reversing D.C. motor, powered from a 4000 k.w. fly-wheel motor-generator set. This set, with its liquid slip regulator provides for the absorption of the high peak loads encountered in rolling mill service.

One of the many outstanding features of this drive is the provision of an individual exciter for each machine. This arrangement, together with Allis-Chalmers' design, gives exceptionally high speeds of reversal without the use of the usual heavy main field contactors and the maintenance incident thereto.

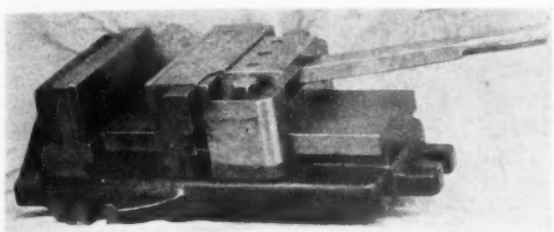
All the DC machines are equipped with Allis-Chalmers frog-leg windings, which are inherently 100% cross-connected without the use of external cross connectors or any additional soldered joints.

ALLIS-CHALMERS

Allis-Chalmers Manufacturing Company, Milwaukee

shown in the accompanying illustration, employs a wedge-lock principle on the movable or locking jaw. There are three units of wedge tapers, one at each end and one in the middle of each jaw. These wedges are the same depth as the vise jaw, which permits a positive uniform parallel pressure between every point of the two jaws. The result is that work of any contour may be clamped at any point between the jaws. The action of the jaw is such that parts may vary in outside contour as much as ⅛ inch and still lock.

The opening between the jaws may be set to accommodate work of different sizes by setting the movable jaw in position by proper engagement of the clamp blocks at either end of the jaw with the racks at the sides of the vise body, and then tightening the bolts. The action of the lock is simple, the first 7 degrees of pull on the lever moves the jaw forward, taking up the loading space, and any further movement of the lever is locking action. Jaws of all vises will open an amount equal to the width of the jaws, and will lock work within that limit. One complete throw of the lever will move the jaw an amount equal to about four turns of a screw.



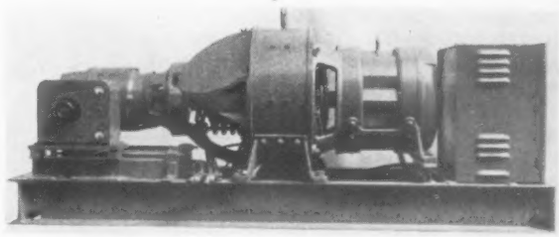
Production vise applies a positive, uniform, parallel pressure

◆

Motor-Driven Welder Has Increased Welding Speed

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has developed a 600-ampere, single-operator, motor-driven welder to provide increased welding speed to meet the gradual trend towards higher welding currents for use with large-size metallic and carbon electrodes. The welder, shown in the accompanying illustration, is designed to handle various sizes of electrodes, including bare and special coated rods requiring current values up to 750 amperes. This machine is available with electric motor or gasoline engine drive and in stationary or portable models.

The motor and generator have a common shaft with two bracket type bearings and a two-bearing exciter overhung from the commutator end of the main generator. The equipment which provides a non-surge welding circuit and arc stabilization is mounted on the channel base under the exciter. The control, including a single-dial field rheostat for adjusting the welding current, ammeter, voltmeter, and starter push button, are all enclosed in a sheet metal cabinet, mounted beside the welding outlet leads. The driving motor is provided with a push button-operated magnetic-type starter.



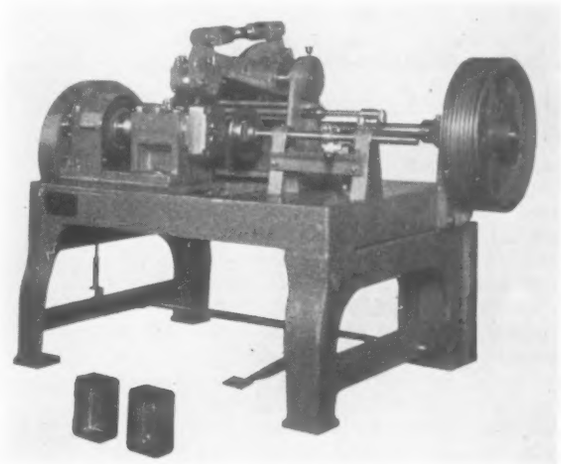
600-ampere welder provides high-speeds

◆

Circular Trimmer Handles Symmetrical Boxes

E. W. Bliss Co., Brooklyn, N. Y., has designed and built a new type of machine for trimming symmetrical boxes or containers made from brass or mild steel. This trimmer, shown in an accompanying illustration, will cut material up to 3/32 inch thick, and it will handle shells measuring 20 inches across corners and up to 6 inches in depth. The minimum size of shells which can be handled is 4½ inches in width and 1 inch deep, while the ratio between width and length of shell can not exceed 2 to 1.

The machine is equipped with a positive rolling key clutch and the gearing is such that the shaft actuating the trimming cam rotates once while the chuck spindle rotates one and one half times. For this reason it is necessary that the shells or boxes be symmetrical, as the starting point is the same every other time the shell is being trimmed. The upper cutter is mounted on a rocker arm which allows conformation to the contour of the article being trimmed. A separate cam is required for each different shape. End thrust bearings on the rocker arm shaft maintain proper clearance between the upper and lower cutters.



Unique machine is especially designed for trimming symmetrical boxes or containers made from brass or mild steel

◆

Redesigned Hand Brake Has Greater Rigidity

Dreis & Krump Mfg. Co., Chicago, has redesigned its line of steel hand brakes to provide greater rigidity and to improve appearance. Electric arc welding has been used to fabricate all rolled steel sections, while the leg design has been changed from angle bars to pressed steel sections. This

construction provides for cross bars in the legs which can be used for a shelf to hold the formers. A new type adjusting link has been provided eliminating the old eccentric adjustment. Adjustment is now performed by a sliding block controlled by set screws. This link provides four times the adjustment of the old eccentric link and is an important feature used in connection with special bending where bars are required to be clamped in with the material to be bent, such as in making internal and part sheet bends.

Springs force knives through pipe wall in operation of pipe cutter

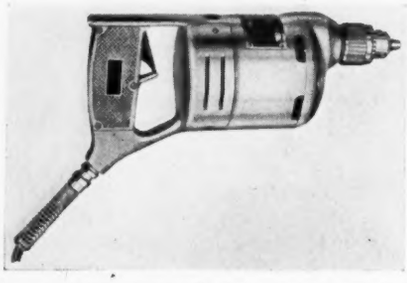
Self-Centering Pipe Cutter Operates Automatically

The Borden Co., Warren, O., has designed a square-end pipe cutter which may be used as either a power or hand tool. The cutter, shown in the accompanying illustration, is a one-piece tool with no loose parts. Self-centering "V" jaws center the tool accurately while springs force the knives through the pipe wall quickly and automatically. Nickel semisteel castings are used in its construction.

◆

Small Electric Drill Is Unusually Compact

Schauer Machine Co., Cincinnati, has developed a ¼-inch standard-duty drill which is unusually compact, measuring only 10½-inches overall, and weighing only 5½ pounds. The machine, shown in the accompanying illustration, embodies a specially-designed motor. The armature shaft and chuck shaft run on sealed ball bearings which are mounted in such a way that the length of the drill is cut down. A removable plate on the housing permits inspection and adjustment of



Inspection and adjustment of equipment is simplified on this drill

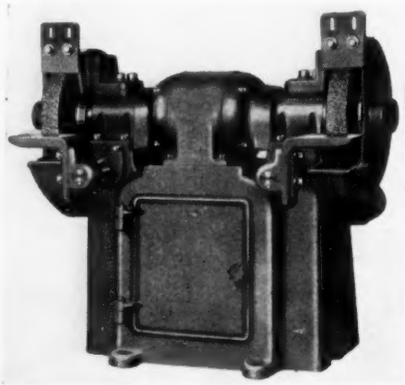
the commutator and brushes, while a similar plate on the handle permits inspection of the switch connections. The power cable is protected by a special clamp and spring which reduces strain on the terminals. A three-jaw key chuck is included as standard equipment.

◆

Improved Grinders Have Greater Stability

Hisey-Wolf Machine Co., Cincinnati, has redesigned its line of heavy-duty floor stand grinders to incorporate in them improvements intended to increase stability and insure ease of operation. The grinders, one of which is shown in the accompanying illustration, are available in 5, 7½ and 10-horsepower capacity for both direct and alternating current installations.

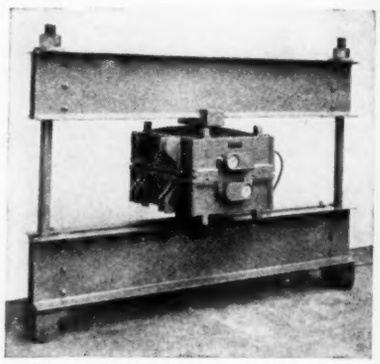
The steel plate guards are supported by two heavy steel brackets each, with the result that the mounting of the guard is as rigid and as strong as the guard itself. A larger door for access to the motor starter has been provided, and the spindle and bearings have been increased in size. All feed wires are encased in flexible metal conduit. The tool grinding rests are constructed of heavy steel, and are adjustable and removable.



Larger spindle and bearing sizes increase grinder efficiency

Portable Unit Vulcanizes Rubber Belting

James C. Heintz & Co., Cleveland, has brought out a portable vulcanizer for use in repairing and splicing rubber belts. Splices up to 21 inches in width may be made, and injuries in belts up to 60 inches in width may be repaired in the field by being permanently vulcanized with the outfit, which is shown in the accompanying illustration. The work is done in the same manner and with the



Vulcanizer will perform efficient shop work in the field

same methods as are used at the factory. The vulcanizer is electrically heated and is equipped with automatic temperature control. Vulcanizing is carried out unde a pressure of 100 pounds per square inch.

◆

New Chain Hoists Handle Bulky Loads Easily

Chisholm-Moore Hoist Corp., Cleveland, is offering a twin-hook electric chain hoist designed to handle bulky loads such as bar steel, automobile bodies, lumber and similar loads. Capacities of the new hoists range from ½ to 3 tons, while the distance between the load chains varies from 3 to 15 feet depending upon the particular handling job. Containers may be attached to the hoist frame for holding the slack chain and keeping it from touching the object lifted. Safety limits stop the operation of the hoist when the hooks reach either the highest or lowest position. A magnetic brake acts instantly with the shutting off of current, and prevents drifting of the load. The hoist mechanism is equipped with eight ball bearings and four self-retaining roller bearings, and operates in a grease bath in a dust-proof, oil-tight frame. The controller is drum type, single speed.

Stand on Price Stiffens Morale

Users and Producers View Stabilization as Constructive Move—More Large Pig Iron Melters Cover—Ferromanganese Cut—Rail Inquiries Out

FORMAL announcement of an advance of $1 per ton for the first quarter on steel bars, plates and shapes, to 1.65c, Pittsburgh, with a similar rise at other basing points, has measurably heightened the morale of the steel industry.

There will be some practical difficulties in giving effect to the advance; it will not be easy to eliminate all carryover; for some preferred customers the new base means an increase of more than $1 per ton.

Yet there is a unanimity of opinion, among producers and consumers alike, that a constructive step has been taken. Important consumers are sympathetic with the move to place steel on a more remunerative basis, believing it precedent to a recovery in general business.

Steel producers discount as pure politics the criticism of some senators. They point out that from January to December heavy steel declined $6 per ton, and some light products even more, without any reduction in wages.

The higher price on heavy steel, effective Jan. 1, has mildly stimulated releases for shipment this month, but the approaching inventory season discourages stocking and few are inclined to speculate. As in sheets, strip and wire products, whose prices have been extended, there is no price advantage now in contracting and many consumers are awaiting a clearer perspective of their first quarter consumption.

Railroad requirements continue dominant, though somewhat slow to reach the order stage. New York Central is definitely out for 170,000 tons of rails, 15 per cent below last year, with track fastenings, probably including 25,000 tons of splice bars, to come later. The Pennsylvania inquiry for 175,000 to 200,000 tons of rails is expected this week. Freight car inquiry includes 4000 by Canadian National, 190 by Canadian Pacific and 250 by Great Northern.

Definite inquiry has been issued by the Inland Waterways Corp. for 30 barges, to be expanded to 50 requiring 32,000 tons of plates. Federal Shipbuilding Co. has closed on four Pacific Mail liners, involving 16,000 tons of plates and 8000 tons of shapes. A steel pipe line in Arizona calls for 13,900 tons of plates, while a 158-mile gas line is projected for the Southwest. Bar inquiry at Chicago is heavier, while all commitments there including rails have made this the best order week this year.

Automotive specifications for flat-rolled products, especially from Chevrolet, are broader, but automotive steel consumption this month will not exceed the November total. More credence is attached to reports Ford will broaden his line, probably by a light eight, increasing his participation in the steel market and presumably involving considerable retooling of his Lincoln or Highland Park plants in Detroit.

Structural steel awards this week totaled 17,966 tons, compared with 27,370 tons last week, with early action expected on 10,000 tons for a Bell Telephone building in New York and 9700 tons for subways. Ten thousand tons will be bought for bridge approaches at St. Louis. Sheets, strip and wire products are more active in first quarter contracting than immediate specifications. Large users of plain wire will be quoted 2.20c, Pittsburgh-Cleveland, for first quarter, with wire rods off $1 to $35.

As pig iron prices evidence greater stability more large consumers are covering for the first quarter.

Steelmaking operations continue at about 40 per cent, with Pittsburgh and eastern Pennsylvania at 38 per cent, Youngstown and Birmingham 43, Chicago 45, Buffalo 24 and Cleveland 48. November steel ingot production, at 89,379 gross tons daily or 11 per cent below October, engaged the industry 44 per cent. For 11 months, ingot output stands at 37,644,765 tons, indicating a 1930 total of slightly under 40,000,000 tons, the leanest year since 1924.

Ferromanganese for 1931 delivery has been reduced $14 per ton, to $85, tidewater, this alloy being contracted for on a long-term basis and taking its drop in one cut. Low carbon ferrochrome and silico-manganese have also been reduced. These adjustments, however, leave STEEL's market composite of $31.84 unchanged.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Dec. 10, 1930)	**$31.84**
Last week (Dec. 3, 1930)	**31.84**
One month ago (November, 1930)	**31.92**
Three months ago (September, 1930)	**32.65**
One year ago (December, 1929)	**35.95**
Ten years ago (December, 1920)	**54.04**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Dec. 10, 1930	Nov. 1930	Sept. 1930	Dec. 1929
PIG IRON				
Bessemer, del. Pittsburgh	$18.76	18.76	20.13	20.76
Basic, valley	17.00	17.00	17.75	18.50
Basic, eastern del. eastern Pa.	17.50	17.50	17.88	19.75
No. 2 foundry, del. Pittsburgh	18.26	18.26	19.13	19.76
No. 2 foundry, Chicago	17.50	17.50	17.50	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.25
**No. 2X, Virginia furnace	18.25	18.25	18.25	18.25
**No. 2X, Eastern del. Phila.	18.76	19.26	19.76	21.76
Malleable, valley	17.50	17.50	18.35	19.00
Malleable, Chicago	17.50	17.50	17.50	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	18.50	19.13
Ferromanganese, del. Pittsburgh	89.79	103.79	103.79	104.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.55	2.55	2.60	2.65
Connellsville foundry, ovens	3.50	3.50	3.50	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.00	31.00	34.00
Sheets bars, open-hearth, Pitts.	31.00	31.00	31.00	34.75
Billets, open-hearth, Pittsburgh	31.00	31.00	31.00	34.75
Wire rods, Pittsburgh	36.00	36.00	36.00	40.00

	Dec. 10, 1930	Nov. 1930	Sept. 1930	Dec. 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.90
Steel bars, Chicago	1.70	1.70	1.70	2.00
Steel bars, Philadelphia	1.89	1.89	1.89	2.22
Iron bars, Chicago	1.70	1.70	1.75	2.00
Shapes, Pittsburgh	1.60	1.60	1.60	1.90
Shapes, Philadelphia	1.76	1.71	1.66	1.91
Shapes, Chicago	1.70	1.70	1.70	2.00
Tank plates, Pittsburgh	1.60	1.60	1.60	1.90
Tank plates, Philadelphia	1.80½	1.805	1.805	2.10
Tank plates, Chicago	1.70	1.70	1.70	2.00
Sheets, blue anl., No. 13, Pitts.	2.05	2.05	2.10	2.15
Sheets, black, No. 24, Pitts.	2.35	2.35	2.40	2.75
Sheets, gal., No. 24, Pittsburgh	2.90	2.95	3.00	3.40
Sheets, black, No. 24, Chicago	2.50	2.45	2.60	2.90
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.30	2.50
Sheets, galvanized, No. 24, Chi.	3.15	3.15	3.25	3.60
Plain wire, Pittsburgh	2.30	2.30	2.30	2.40
Wire nails, Pittsburgh	1.90	1.90	2.00	2.40
Tin plate, per base box, Pitts.	5.00	5.00	5.25	5.35
SCRAP				
Heavy melting steel, Pitts.	12.75	13.10	15.70	15.10
Heavy melting steel, eastern Pa.	11.25	11.50	13.00	14.50
Heavy melting steel, Chicago	10.00	10.20	12.25	12.50
No. 1 wrought, eastern Pa.	13.50	13.50	14.25	15.25
No. 1 wrought, Chicago	10.00	10.00	11.25	13.25
Rails for rolling, Chicago	13.00	13.10	14.50	14.60

Sheets

Business Continues To Taper—Automotive Demand Improved Temporarily—Prices Steady

SHEET PRICES, PAGE 81

Pittsburgh—Improvement in the sheet market is confined to an increase in number of first quarter contracts. Specifications continue light and operations still are declining, the current rate being no higher than 35 per cent. Consumers are seeking protection at present prices and first quarter bookings are more numerous, particularly from the smaller buyers. Prices are showing increased stability at recent levels of 2.35c to 2.45c for black sheets, 2.90c to 3.00c for galvanized, 1.90c for blue annealed plates, and 2.05c for blue annealed sheets. Autobody continue 3.30c, with little tonnage sold. Specifications are restricted by the desire of buyers to curtail stocks over the end of the year.

Philadelphia—Sheet business is slow and mills are not actively soliciting business for first quarter. Blue annealed continue 1.90c to 2.00c, base, Pittsburgh, for heavy gages, plus $3 a ton for the light gages. Black generally are firm at 2.35c, Pittsburgh; galvanized range from 2.90c to 3.00c, although lower than 3.00c is available only for immediate specification.

New York—While 2.90c has not disappeared, the price of galvanized sheets is becoming more general at 3.00c, Pittsburgh, minimum. With some sellers 3.00c becomes effective Dec. 15, and as they have little time in which to take and deliver new business before that date they now are practically on a 3.00c basis. Black sheets are 2.35c, Pittsburgh; No. 10 blue annealed, 1.90c; and No. 15 blue annealed, 2.05c, for first quarter.

Youngstown, O.—Two independent sheet mills at Niles, O., and one in the eastern part of this city, idle last week, have resumed operations. New buying of all grades of sheets has subsided to routine proportions, with the possible exception of some autobody sheets needed by certain builders for new models. The autobody stocks received from mills by one builder in northwestern Ohio within the past ten days have been sufficient for the present. One other Michigan builder of popular priced cars, not in the immediate Detroit district, however, is continuing to exert delivery pressure on mills for autobody sheets and this may last through next week. Valley makers of sheets are pointing out that the recently announced schedule for first quarter named by the leading interest is out of line with common black quoted at 2.35c and galvanized at 3.00c. They cannot understand such action in view of the $1 a ton higher price schedule previously named on sheets and strip by Chicago district makers.

Cleveland—Sheet inquiry is better but sheet orders still are limited. Some additional releases from automotive users are reported by producers in this and nearby districts. Truck and bus builders recently purchased fair tonnages. A few orders have been placed for metal furniture and office building work, but the Higbee Co. store tonnage is still pending. Fair tonnages of the light gages recently were sold to toy manufacturers. Galvanized in the prompt market are 2.90c to 3.00c, Pittsburgh, while blue annealed are 1.90c and 2.05c, depending upon the gage. Buyers still are endeavoring to place black at 2.25c, usually quoted 2.35c. Autobody sheets are 3.30c, and metal furniture 3.60c, Pittsburgh.

Chicago—Forward contracting for sheets is more active than in 15 months, according to producers who have been booking numerous orders. Assurance is given by some buyers that specifications will be in after Dec. 15 for shipments to start Jan. 2. A 2.45c, mill, price still exists for No. 24 black sheets, but applies only to large jobbing and manufacturing tonnages.

Cincinnati — Improved operations in sheet mills of this district are holding, due chiefly to automotive demand.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.35c to 2.45c
Philadelphia, delivered	2.64c to 2.74c
*Gary, Indiana Harbor	2.45c to 2.55c
*Chicago, delivered	2.50c to 2.60c
Birmingham, base	2.50c to 2.60c
St. Louis, del.	2.80½c

*Min. applies to large quantities.

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.65c to 2.75c
Gary, base	2.75c to 2.85c

GALVANIZED NO. 24

Pittsburgh, base	2.90c to 3.00c
Philadelphia, delivered	3.19c to 3.29c
Gary Indiana Harbor	3.10c
Chicago, delivered	3.15c
Birmingham, base	3.15c
St. Louis, del.	3.35½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.05c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.50½c
Philadelphia, delivered	2.34c to 2.44c
Birmingham	2.20c to 2.25c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	1.90c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.19c to 2.29c
St. Louis, delivered	2.35½c
Birmingham	2.05c to 2.10c

AUTOMOBILE NO. 20

Pittsburgh, base	3.30c

FURNITURE NO. 24

Pittsburgh, patent leveled	3.60c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	5.00

Gary, Ind., base 10 cents higher.

Long ternes, 24, assorted	3.55c
Long ternes, 24, unassorted	3.45c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.05c and 2.15c
Galvanized wire	2.50c and 2.60c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.50c
Nails, delivered Detroit	$2.35

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c
Struc., c.l., Chicago	2.85c
**7/16-inch and smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Base, Pittsburgh	1.60c to 1.65c
Philadelphia, del.	1.80¼c
New York, del.	1.88c to 1.93c
Boston, del.	2.00c to 2.05c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.83½c
Lackawanna, N. Y., base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Coatesville, Pa., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.10c to 2.20c
St. Louis, del.	1.95½c

Structural Shapes

Base, Pittsburgh	1.60c
Philadelphia, del.	1.76c
New York, del.	1.75½c to 1.85½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.70c to 1.75c
Cleveland, delivered	1.78½c to 1.83½c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.75c to 1.80c
Pacific Coast, c.i.f.	2.15c to 2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.60c to 1.65c
Chicago, base	1.70c to 1.75c
Birmingham, base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c to 1.75c
Pacific Coast, c.i.f.	2.25c
Cleve. base, local del.	1.65c
Do, outside delivery	1.65c
Philadelphia, del.	1.89c
New York, delivered	1.93c to 1.98c
Boston, delivered	2.00c to 2.05c
Pittsburgh, cold finish	1.75c to 1.80c
Pittsburgh, forg. qual.	1.85c to 1.90c

RAIL STEEL

Chicago Heights	1.65c
Eastern mills	1.65c

IRON

Chicago, base	1.70c
New York, delivered	2.03c
Philadelphia, delivered	2.04c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet	1.70c to 1.80c
Chi., rail steel	1.50c to 1.60c
Chi. rail steel, road and bridge work	1.65c to 1.75c
Philadelphia, cut lengths	2.04c to 2.09c

Cold-Finished Steel Bars and Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.00c to 2.10c
Shafting, turned and ground, mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates 31c; bars 28c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni	1.05
2100	0.55	5100 .80-1.10 Cr.	0.45
2300	1.50	5100 Chr. spring	0.20
2500	2.25	6100 bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Chr., Ni., Van.	1.50
3300	3.80	Carbon Van.	0.95
3400	3.20	9250 (flats)	0.25
4100 .15 to .25 Mo.	0.50	9250 (rds., sq.)	0.50
4600.20 30 mo.			

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.65c to 1.70c
Hot strip 6 1/16 to 24-in. Pitts.	1.55c to 1.60c
Hot strip, bands 6 in. and under, Chicago	1.80c
Do. 6 1/16 to 24 in.	1.70c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do, Chicago	2.00c to 2.10c
Cold rolled strip, Pitts., Cleve., 3 tons, over	2.25c to 2.35c
Worcester, 3 tons, over	2.50c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.60

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off

Upset 1 in. diam. and smaller ..... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off

Upset 1 in. and smaller ..... 80-10-5 off

Upset, larger than 1 in. ..... 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l., mills	2.45c
Do, less carloads	2.55c
Chain, BB, BBB, 9/16-1½ in.	$3 1/3 off
Sheet piling, Pitts.	2.00c

Bars

Fourth Quarter Tonnages Specified More Freely Under Advanced Price for Next Quarter

BAR PRICES, PAGE 81

Chicago—Several tonnage contracts have been closed for first quarter bar products at the $1 advance announced for bars, plates and shapes Dec. 3, which brings the base price to 1.75c, Chicago, for that period. Included were automotive buyers and parts makers, spring manufacturers, forgers and cold finishers. One mill reports the week's contracting the heaviest in about 90 days and finds contract sales on plates and shapes better than the recent average. Including railroad trackage previously ordered and just entered on books, this virtually was the best sales weeks of the year. Mills announce no protections will be extended on the present 1.70c price after Jan. 1, and that tonnage now on order must be shipped this month to benefit from the lower price. The advance apparently has succeeded in stimulating specifications, although shipping orders are not much above the late averages. Implement specifications show a mild gain, but both tractor and implement makers are uncertain about the coming season's production schedules.

New York—Steel bar sellers generally quote the new 1.65c price on all new business. However, the new figure is yet to be tested and a spread of 1.60c to 1.65c, Pittsburgh, appears applicable. Demand is slightly better, stimulated, undoubtedly, by prospects of higher quotations.

Philadelphia—Steel bars now are 1.60c to 1.65c, Pittsburgh, and contracting for first quarter has been begun on this level. Specifications for bars on expiring fourth quarter contracts are somewhat more active. Iron bars continue 1.60c to 1.70c, Pittsburgh, with demand slow.

Pittsburgh — Announcement of 1.65c, Pittsburgh, on steel bars by the Carnegie Steel Co. on tonnage shipped after Jan. 1 has been adopted by other producers. The price on business over the rest of the month continues 1.60c. Contracting for first quarter so far is light and the price advance has had little stimulating effect on specifications against old contracts. Incoming tonnage holds in about the November volume.

Youngstown, O.—Little more than academic interest is being displayed by steel bar buyers in the recently announced first quarter price of 1.65c, Pittsburgh, at least so far as placing contracts with mills here is concerned. Local independent bar producers are operating around 40 per cent, and the Carnegie Steel Co. bar mills about 45 per cent of capacity. Bar shipments are at a minimum.

Cleveland—Orders are for small lots. One seller in this district has had an even flow of orders over the past two months, though this is an exception. Effects of stock-taking are being felt. The 1.65c price named for first quarter is not expected to be tested until late in January. Consumers, with few exception, welcome the higher price as conducive to business return. Local mills nominally quote 1.65c for local and outside delivery, though 1.60c, outside, is mentioned by some sellers.

Cold-Finished Bar Price Awaits Confirmation

Cold Finished Prices, Page 81

Cleveland — Cold-finished bar orders lack improvement, rather have shown continued lagging this month compared with last. With most producers announcing first quarter prices on other finished steel products, cold-finished steel bars still are 2.00c to 2.10c, and lack official confirmation of this price for that period. The recent advance in hot bars to 1.65c has not been reflected in the cold-finished market.

Pittsburgh—Cold-finished steel bar producers defer announcement of first quarter price with the market currently 2.00c to 2.10c. Specifications so far this month are smaller than in November, automotive activity declining in spite of introduction of several models. Influence of the inventory period also is having effect on shipments.

Plates

Market Now on 1.65c, Pittsburgh, Base, for First Quarter —Ship Tonnage Encouraging

PLATE PRICES, PAGE 81

New York—Leading plate sellers are quoting an advance of $1 on all new plate business, or 1.75c, Coatesville, Pa. Not all, however, have definitely taken this action, so that a spread of 1.70c to 1.75c prevails, subject to test. Those adopting the new price plan to extend it on first quarter shipments. Four Pacific Mail boats have been placed with the Federal Shipbuilding Co., Kearny, N. J., a subsidiary of the United States Steel Corp. The boats will require an aggregate of 24,000 tons of steel, of which approximately 16,000 tons will be plates. The railroads are expected to begin entering the market next week for quarterly requirements. Tank and pipe work is light. Fabricators of plate products declare their market is as weak as any time this year, notwithstanding the stronger tone in plain material.

Pittsburgh — Inland Waterways Corp., the federal barge line, is taking bids until Dec. 30 on 30 of two different types of barges, and is expected to place 50 requiring about 32,000 tons of plates and shapes, in addition to three tow boats requiring about 600 tons. United States engineers, Rock Island, Ill., have awarded ten barges taking 750 tons. Plates have been advanced $1 a ton to 1.65c for first quarter, with the market continuing 1.60c for the remainder of this month. Specifications are light.

Philadelphia—While general demand for plates shows no improvement, several good size orders have been booked by eastern mills. Eastern mills have booked considerable plate tonnage for work for the Brooklyn Edison Co. Eastern mills are operating at an average of about 40 per cent. The general price is 1.70c, base, Coatesville, Pa., and mills have advised consumers special prices will be withdrawn at the end of the year.

Cleveland—Plate business is listless. More inquiry has developed recently on the basis of 1.65c, Pittsburgh, for first quarter. Smaller plate producers selling in this district also name 1.65c for first quarter. Ship repair work, ordinarily seasonally active, is the dullest in almost a decade. Lake freighter owners defer plate repair work.

Chicago—Plate sales for first quarter, which gained in the last few days, included tonnage against pending and projected pipe line work. It is understood a 15,000-ton pipe line project in Arizona may be closed. Some tank work also was awarded for first quarter. Specifica-

tions show a gain over recent weeks. Miscellaneous tank work placed for early shipment totals about 1000 tons. Makers report there will be no carryover of the 1.70c price into first quarter, for which period 1.75c, mills, has been named.

Railroad opposition to pipe lines may result in hastening several pending projects.

Contracts Placed

16,000 tons, four vessels for Pacific Mail line, construction awarded to Federal Shipbuilding Co., Kearny, N. J., subsidiary of United States Steel Corp.; approximately 8000 tons of additional steel is involved.

4400 tons, plates, shapes, sheets and rivets, for gas holder, Philadelphia Electric Co., West Conshohocken, Pa., to Cruse-Kemper Co., to be fabricated at Ambler, Pa., shop; foundations, United Engineers & Constructors Inc., Philadelphia.

750 tons, ten barges for United States Engineers, Rock Island, Ill., to Midland Barge Co., Midland, Pa.

200 tons, two tanks and towers for Olympia, Wash., to Pittsburgh-Des Moines Steel Co., Seattle.

Contracts Pending

32,000 tons, 50 barges, Inland Waterways Corp.; bids close Dec. 30.

3000 tons, municipal jail, Riker's island, New York; general contract awarded to P. J. Carlin, Greene avenue, Brooklyn, N. Y.

Tin Plate Inquiry Larger; 200,000 Boxes Wanted

Tin Plate Prices, Page 81

Pittsburgh—New contracting in tin plate still is slow, while specifications remain steady and operations show a slight improvement. The current operating average for the industry now is closer to 45 per cent against 40 to 45 per cent a week ago. A number of contracts for the first half of 1931 have been entered but some buyers defer placing new tonnage. The market holds at $5 per base box.

New York—An inquiry for 200,000 base boxes of tin plate has been issued by the Standard Oil Co. of New Jersey. The company has not as yet purchased next year's requirements. Early action on the part of the two leading consumers is expected. Prices remain at $5, base box, Pittsburgh.

Mexico Lowers Duties

Washington—Effective Dec. 14 by presidential decree, Mexico will lower its import duties on hollow steel drills, crucible and furnaces of refractory material, plumbago crucibles, most scientific instruments and refractory brick, among others.

Railroads

N. Y. C. Wants 170,000 Tons of Rails—Car Inquiry Lighter—Large Fastening Orders Near

TRACK MATERIAL PRICES, PAGE 81

New York—New York Central will open bids Dec. 18 on 170,000 tons of 105,115 and 127-pound rails. Last year's inquiry totaled 206,000 tons. New York, New Haven & Hartford's inquiry will come along later.

Car buying is light, and while there are prospects of some substantial inquiry, little actual business is expected to develop before early 1931.

Philadelphia — Pennsylvania railroad's inquiry for 175,000 to 200,000 tons is expected out this week.

Pittsburgh—A scarcity of inquiry exists in the market for track material and cars. The New York Central railroad as yet has not inquired here for fastenings to accompany its rail tonnage. Specifications for track material are seasonally slow while activity in light rails and relaying rails is restricted.

Chicago—Steel rail tonnage specified for early shipment is in such volume that the district's rail mill output was raised to 40 per cent from 30 to 35 per cent a week ago. It is indicated about 50 per cent of the 170,000 tons of rails to be bought by the New York Central will be let to western mills. Elgin, Joliet & Eastern railroad has purchased a few thousand tons of its expected 1931 requirements. Track fastenings sales totaled about 4000 tons. In addition to the New York Central need for splice bars, estimated at 25,000 tons, track fastenings to be required by Chesapeake & Ohio, Pere Marquette, and Kansas City Southern will total about 10,000 tons,

Another road in western territory is planning a car construction program of its own.

Car Orders Placed

Carnegie Steel Co., 30 70-ton gondolas to American Car & Foundry Co., Buffalo, and 20 70-ton flats to Standard Steel Car Co., Pittsburgh.

Standard Refrigerator Car Co., 45 refrigerator cars, to English Car & Mfg. Co., English, Ind.

Car Orders Pending

Canadian National, 4000 freight cars, including 3000 steel frame box cars, 500 each composite gondola and composite general service cars; as previously noted, this railroad will build 500 refrigerator cars in its own shops.

Canadian Pacific, 190 cars including 100 flats, 35 air-dump cars, and 55 passenger cars.

Great Northern, 250 steel gondolas to cost $500,000.

Locomotives Pending

St. Louis-Southwestern, 10 locomotives.

Rail Orders Pending

170,000 tons of 105, 115 and 127-pound rails, New York Central; bids Dec. 18.

175,000 to 200,000 tons of rails, Pennsylvania, formal inquiry expected later this week.

Iron Ore Stocks Little Changed from Year Ago

Iron Ore Prices, Page 92

Cleveland—Dock balances of iron ore at Lake Erie ports Dec. 1 were approximately the same as on Dec. 1, 1929, though receipts for the season fell to 31,779,844 tons, compared with 45,747,079 tons in 1929, according to the Lake Superior Iron Ore association's current report. Receipts and shipments follow:

Port	Receipts	Shipments	Dock balance Dec. 1, 1930
Buffalo	2,898,965	172,627	3,782
Erie	1,063,813	1,128,767	66,943
Conneaut	7,651,381	7,320,306	1,963,260
Ashtabula	5,718,879	4,940,896	2,314,019
Fairport	1,923,509	1,808,487	472,340
Cleveland	7,374,894	4,905,635	1,121,061
Lorain	2,532,098	962,315	165,664
Huron	883,114	915,906	330,358
Toledo	1,733,191	980,966	28,899
Total	31,779,844	23,135,905	6,466,326
Comparative 1 yearago	45,747,079	32,907,221	6,489,612

Receipts for the season at other than Lake Erie ports follow:

Port	Season
Detroit	1,103,890
Indiana Harbor	2,501,913
Gary	3,909,360
South Chicago	6,135,411
Sault Ste. Marie, Ontario	334,025
Point Edward, Ontario	352,730
Total	14,337,329
Comparative 1 year ago	18,779,099

The market is devoid of activity. The Ford Motor Co., which has two underground mines on the Marquette range, recently purchased 300 acres of iron ore land on the Menominee range from Capt. J. T. Spencer, of Iron Mountain, Mich. The deposit is a low grade ore, which may be mined by the open pit method after development.

Boston—The first cargo, 6500 tons, of 200,000 tons of Spanish ore for the Mystic Iron Works, has arrived at the company's plant at Everett, Mass.

Structural Shapes

Private Work Declining—Engineering Projects Active—Bridges Account for Large Tonnages—4300-Ton Subway Let in Philadelphia—10,000-Ton Bridge Pending

STRUCTURAL SHAPE PRICES, PAGE 81

New York—While new engineering and public work comes out in good volume, private building has declined. Plain material prices are steadier with 1.885c, delivered New York, more firmly established. Some additional buying is expected to follow recent announcements of price advances applying to first quarter. P. J. Carlin Co. was low on the general contract, Riker's Island penitentiary, readvertised bids. About 10,000 tons of steel, including shapes, plates and pipe, will be required.

Structural steel lettings during November in the metropolitan area totaled 25,513 tons, according to the New York Structural Steel Board of Trade against 30,948 tons in October and 42,521 tons in November, 1929. Subways, bridges and engineering projects are not included.

New York Central has recommended to its board of estimate that general contract for the third section of elevated highway, here, be let to James Stewart & Co. Inc. Approximately 15,000 tons of steel will be purchased.

Boston — Structural conditions show little if any change. Two contracts are pending here but they only involve 150 and 100 tons, resepctively. One 150-ton job was let.

Philadelphia — The 1.70c, base, nearest eastern mill, is now the usual price on new business in plain standard shapes although not all old prices have been withdrawn. Old levels have been extended on certain old projects for a reasonable period beyond Dec. 10. Eastern shape mills operate around 50 per cent.

Pittsburgh—Bridge work still predominates in prospective structural jobs. State bridges at Kittanning, Pa., and Indiana county, Pa., on which bids close Dec. 18, involve 2200 tons. Bids are expected in the near future on the Boston bridge and South Tenth street bridge over the Monongahela river for Allegheny county. Shapes have been advanced $1 a ton to 1.65c on first quarter tonnage. The market currently is 1.60c, Pittsburgh.

Cleveland—Shape awards still are confined to small tonnages, except John Marshall high school, 600 tons, which went to Kilroy Structural Steel Co. Another school is due for letting Dec. 12. General contract on a 400-ton grade elimination for New York Central at Bowmansville, N. Y., went to John Johnson Construction Co., Buffalo. A federal building at Toledo, O., and a theater at Mansfield, O., still are pending. Mills report more inquiry for first quarter, with few closings. Producers quote 1.65c, Pittsburgh, for first quarter.

Chicago—Structural awards total about 10,000 tons and inquiries are about 4500 tons, including two Pacific coast jobs. Approaches to the municipal free bridge at St. Louis will take about 10,000 tons. Mills indicate that some specifications have been taken out as a direct result of the $1 advance in the plain material base to 1.75c, Chicago, for first quarter. Most promising in this district is the school program for Chicago. Reports from Washington indicate that the 25,000-ton Chicago post office may be up for figures some time in January.

Birmingham, Ala.—Fabricators receiving numerous small awards and a few larger ones continue their 5-day week programs. A 250-ton lot for a crane at the Washington state hydroelectric works went to Virginia Bridge & Iron Co.

Contracts Placed

4300 tons, Locust street subway, Philadelphia, to American Bridge Co., Pittsburgh; Golder Construction Co., Philadelphia, general contractor.

4300 tons, House of Representatives office building, Washington, formally awarded American Bridge Co., Pittsburgh, through Consolidated Engineering Co., Baltimore; last week's issue listed this item as 4900 tons, reported placed with American Bridge Co.

4100 tons, building, First National Bank & Trust Co., Oklahoma City, Okla., to McClintic-Marshall Co., Pittsburgh; reported last week as 4000 tons to unstated fabricator.

2000 tons, steam power plant at Minneapolis, to Minneapolis-Moline Power Implement Co., Minneapolis, instead of Minneapolis Steel & Machinery Co., as previously noted.

1400 tons, pier, Canton Railroad Co., Baltimore, to Bethlehem Steel Co., Bethelhem, Pa.; Sanford & Brooks, engineers and contractors.

1300 tons, five bridges for Louisiana highway commission, to Vincennes Bridge Co., Vincennes, Ind.

1000 tons, several bridge spans for Chicago, Milwaukee, St. Paul & Pacific railroad, to American Bridge Co., Chicago.

1000 tons, Theodore Roosevelt high school, Washington, to Lehigh Structural Steel Co., Allentown, Pa.; National Construction Co., Washington, general contractor.

950 tons, Paramount theater, Oakland, Calif., to Moore Drydock Co., Oakland.

900 tons, office building Monroe and Central avenues, Phoenix, Ariz., to Kansas City Structural Steel Co., Kansas City, Mo.

800 tons, 4-story convent and chapel, Mendham, N. J., to Alfred Smith's Sons Inc., Irvington, N. J.; J. J. McMahon Co., New York, general contractor.

700 tons, Valley bank, Phoenix, Ariz., to Kansas City Structural Steel Co., Kansas City, Mo.

700 tons, 12-story apartment, East Eighty-eighth street, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa.; Fred T. Ley & Co. Inc., general contractor.

600 tons, John Marshall high school, Cleveland, to Kilroy Structural Steel Co., Cleveland; Crowell & Little Construction Co., Cleveland, general contractor.

560 tons, state tobacco warehouse, Baltimore, to Dietrich Bros., Baltimore.

521 tons, First street bridge, San Diego, Calif., to Virginia Bridge & Iron Co., Roanoke, Va.

500 tons, public school, 76 Adee avenue, Bronx, N. Y., to Easton Structural Steel Co., Easton, Pa.; Agostini Bros., general contractors.

500 tons, building for Snowflake Lime Ltd., St. John, N. B., to St. John Dry Dock & Shipbuilding Co. Ltd., St. John.

450 tons, girls' high school, New Orleans, to Virginia Bridge & Iron Co., Birmingham, Ala.; J. A. Petty & Sons, general contractors.

450 tons, miscellaneous work including transformer tower, Puget Sound navy yard, power house for White River Lumber Co., Seattle, and viaduct for Booth Fisheries Co., Seattle, to Isaacson Iron Works, Seattle.

400 tons, high school for negroes, Baltimore, to Dietrich Bros., Baltimore.

320 tons, store building, S. H. Kress & Co., Tulsa, Okla., to Kansas City, Mo.

250 tons, warehouse addition, Rockwell place, Brooklyn, N. Y., to George A. Just Co., Long Island City, N. Y.

250 tons, Electric Realty building, Philadelphia, to McClintic-Marshall Co., Pittsburgh; incorrectly listed last week as going to Shoemaker Bridge Co., Pottstown, Pa.

250 tons, crane for hydroelectric plant, Washington, to Virginia Bridge & Iron

Awards Compared

	Tons
Awards this week	**18,816**
Awards last week	**27,370**
Awards two weeks ago	**35,037**
Awards this week in 1929	**22,567**
Av. weekly awards, 1930	**35,191**
Av. weekly awards, 1929	**42,213**
Av. weekly awards, Nov.	**33,202**
Tot. awards to date, 1929	**2,039,948**
Tot. awards to date, 1930	**1,759,573**

Co., Birmingham, Ala.
250 tons, state highway bridge, Henderson, Minn., to American Bridge Co., Pittsburgh; previously reported to unstated fabricator.
225 tons, Maine Central railroad bridge, New Meadows, Me., to Phoenix Bridge Co., Phoenixville, Pa.
225 tons, state bridge over Snoqualmie river, Washington, to Isaacson Iron Works, Seattle.
200 tons, bridge in California, Southern Pacific railroad, to Virginia Bridge & Iron Co., Birmingham, Ala.
150 tons, 6-story apartment, Grand Concourse, near 183rd street, Bronx, N. Y., to Cosmic Iron Works, Bronx.
150 tons, granite shed at Frankfort, Me., to Lyons Iron Works Inc., Manchester, N. H.
150 tons, St. Catherine church, Washington boulevard and Austin avenue, Chicago, to Hansell-Elcock Co., Chicago; W. J. Lynch Construction Co.
140 tons, apartment, Forty-second street, near Queens boulevard, Queens, N. Y., to J. Klein Iron Works, Astoria, N. Y.
125 tons, nurses' home, Richmond, Va., to Richmond Structural Steel Co., Richmond, joists and reinforcing steel to Truscon Steel Co., Youngstown, O.
100 tons, automobile service and garage building, New Jersey Bell Telephone Co., Trenton, N. J., to N. A. K. Bugbee Co., Trenton; Harrison & Fisher Co., general contractor.

Contracts Pending

15,000 tons, third section, elevated highway, New York; James Stewart & Co. Inc., recommended to board of estimate for general contract by New York Central railroad.
10,000 tons, approaches to municipal free bridge over Mississippi river, between St. Louis and East St. Louis, Ill.
3000 tons, general hospital, seven buildings, Queens, N. Y.; bids Dec. 12.
3000 tons, Norwood bridge, Winnipeg, Man.; cost to be shared by Winnipeg and St. Boniface, Que.
2300 tons, office building for Iowa-Des Moines National Bank & Trust Co., Des Moines, Iowa.
2000 tons, subway, Newark, N. J.
1900 tons, Pennsylvania state bridge over Monongahela river at Kittanning, Pa.; bids close Dec. 18.
1500 tons, Queen Victoria school, Toronto, Ont.
1300 tons, bridge, Susquehanna river, DeWart, Pa., Pennsylvania railroad; bids Dec. 16; railroad also takes bids on same date for bridge near McKeesport, Pa.
1000 tons, bridge over Yamachiche river, St. Boniface, Que., for Quebec department of public works.
900 tons, Enoch Pratt library, Baltimore.
900 tons, 12-story apartment, West Ninetieth street, New York.
800 tons, highway bridge at Pulga, Calif.
700 tons, building, Reading National bank, Reading, Pa.
700 tons, junior high school, Fifty-sixth and Rockwell streets, Chicago.
500 tons, viaduct for Union Pacific railroad, at Omaha, Nebr.
500 tons, federal penitentiary, Lewisburg, Pa.
500 tons, Fidelity Trust building, Wilmington, Del.
500 tons, state bridge, Painesville, O., revived; bids close Dec. 23.
500 tons, theater, Mansfield, O.; bids in.
450 tons, George Allen store, Philadelphia.
400 tons, federal building, Toledo, O.; bids in.
400 tons, grade elimination, New York Central railroad, Bowmanville, N. Y.; general contract to John Johnson Construction Co., Buffalo.
400 tons, Harry Alexander hotel, in care of Arlington hotel, Cobourg, Ont.
350 tons, Strawbridge & Clothier Co., building, Jenkintown, Pa.
300 tons, theater at Alameda, Calif.
300 tons, Richmond street bridge, London, Ont., bids being taken by city council.
300 tons, apartment, Ardmore, Pa.; general contractor, F. V. Warren.
300 tons, Pennsylvania state highway bridge, Indiana county; bids close Dec. 18.
220 tons, factory, Gabriel B. Roth, East Belgrade street, Philadelphia.
215 tons, normal school building, Geneseo, N. Y.; H. J. Conrath Co., Erie, Pa., general contractor.
203 tons, warehouse, Puget Sound navy yard; bids being taken.
200 tons, airport hangar, Woodside, Queens, N. Y.; Wilbur Watson, Cleveland, engineer.
200 tons, Airey C. Williams school, Wilmington, Del.
150 tons, coal pocket, New England Fuel & Transportation Co., Everett, Mass.
150 tons, building, General hospital, Wilmington, Del.
125 tons, building, Long Island Press Publishing Co., Jamaica, N. Y.
108 tons, bridge over Richardson bay, Marin county, Calif.; bids opened.
100 tons, building, Brown university, Providence, R. I.
Unstated tonnage, nurses' home, Dannemora, N. Y., state hospital; general contract to John Johnson Construction Co., Buffalo, which bid $114,810.
Unstated tonnage, 33-story club house, Motors Association of Illinois, Michigan avenue and Twenty-fourth street, Chicago.

Concrete Bars

1000-Ton River Bridge Let at Evansville, Ind.—Other Awards in 100 to 500-Ton Range Numerous—Inquiry Lagging as Year End Approaches—Prices Firming

REINFORCING BAR PRICES, PAGE 81

Chicago—Outstanding in reinforcing bar orders is 1000 tons for Ohio river bridge approaches at Evansville, Ind. About 2000 to 2500 tons, largely for state and federal government work and utility programs, is pending in several western states.

Boston—Approximately 500 tons of concrete bars went under contract this past week in this section, included 165 tons for a bath-house foundation. Prices remain erratic, showing some weakness.

New York—Concrete reinforcing bar prices are steadier. There is less shading on large lots. New volume is confined largely to public work.

Pittsburgh — Reinforcing bar awards and inquiries involve only small lots. Incoming business is unchanged from recent weeks. Prices are fairly steady, with an increase of $1 a ton scheduled for first quarter business in keeping with the rise in merchant bars. The current market usually is 1.90c for cut lengths and 1.70c for stock lengths.

Buffalo—A seller here booked 200 tons of reinforcing bars for a district school.

Birmingham, Ala.—Concrete bar shipments remain steady and business seems to be improving.

Awards Compared

	Tons
Awards this week	**4,350**
Awards last week	**5,140**
Awards two weeks ago	**15,710**
Awards this week in 1929	**4,410**
Av. weekly awards, 1929	**5,849**
Av. weekly awards, 1930	**7,144**
Average weekly awards Nov.	**8,752**
Total awards to date, 1929	**297,964**
Total awards to date, 1930	**357,222**

Contracts Placed

1000 tons, approaches for bridge over Ohio river at Evansville, Ind., to unstated fabricator.
800 tons, House of Representatives office building, Washington, to Truscon Steel Co., Youngstown, O.
400 tons, school in Minneapolis, to Olney J. Dean & Co., Chicago.
350 tons, joint trunk sewer section No. 1, Elizabeth-Orange-Newark, N. J., to Igoe Bros., Newark; D. & M. Construction Co., Maplewood, N. J.
300 tons Bienville street wharf, New Orleans, to Connors Steel Co., Birmingham, Ala.
300 tons, apartment, Franklin street, Los Angeles, to unstated interest.
230 tons, trunk line sewer, first section Yonkers-Chappaqua route, Westchester County Sanitary commission, New York, to Tidewater Structural Materials Corp., New York; Anthony Cianciulli, general contractor.
200 tons, school No. 64, Buffalo, to unstated Buffalo fabricator.
165 tons, L street bath-house foundation, South Boston, to Barker Steel Co., Boston.
150 tons, Lutheran Deaconess home, Chicago, to Joseph T. Ryerson & Son Inc., Chicago.
125 tons, Professional Arts building

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Strip

Little Improvement in Demand Though Releases Are Better—Prices Are Holding Well

STRIP PRICES, PAGE 81

Pittsburgh—Activity in strip continues at about the November rate. Automotive tonnage is off slightly but miscellaneous consumers are taking as much or more material than a month ago. First quarter contracting is slow with the market usually 1.55c and 1.65c for the larger lots of hot strip and $1 a ton higher on smaller orders. Cold-rolled strip is 2.25c to 2.35c. Mill operations continue irregular with the average for hot strip over a number of weeks around 30 per cent, while cold mill schedules continue 20 to 25 per cent.

New York—With prices already established for first quarter at existing levels, buyers of strip steel continue to order lightly. Hot strip, however, continues in somewhat better demand than cold strip. Hot strip is quoted 1.55c, Pittsburgh, for wide and 1.65c, for narrow. Cold rolled strip is 2.25c, Pittsburgh.

Philadelphia—Demand for steel strip continues slow. Makers are accepting contracts for first quarter where consumers desire, but are not soliciting business for that delivery. Hot-rolled strip generally is 1.55c to 1.60c, Pittsburgh, on 6 to 24 inches, 1.65c to 1.70c, Pittsburgh up to 6 inches. Cold-rolled strip usually is 2.35c, Pittsburgh, with occasionally 2.25c on large lots. Wide strip continues 1.75c, Pittsburgh for heavy gages plus $3, for light gages.

Youngstown, O.—Coincident with the slight flurry in autobody sheet buying of the past ten days, makers of hot-rolled strip also have received similar hurry-up orders and have been working overtime. General consumption lines of both hot and cold-rolled strip are taking preinventory small lots for immediate consumption. Contracts for first quarter needs are being discussed in a perfunctory sort of way by buyers.

Cleveland — Additional releases for hot strip tonnage have come from toy and bicycle manufacturers. Some automotive and parts makers continue active but, in the main, the market shows no improvement over past weeks. First quarter inquiry is appearing although closing so far has been limited to a few. Within the next week or two dilatory buyers are expected to get under cover. Cold strip demand still is limited, quoted 2.25c to 2.35c, Cleveland. Hot is 1.55c to 1.60c, Pittsburgh, on the wide and $2 higher on the narrow.

Chicago—Hot and cold-rolled strip producers report further releases of automotive tonnage for shipment early in first quarter. These tonnages, with moderate spot orders from a number of miscellaneous buyers in the immediate district, have stimulated the flow of specifications. Prompt shipments in cold-rolled are being made. Occasional moderate first quarter orders for hot-rolled are closed on the basis of 1.80c for narrow size, and 1.70c, Chicago, for wider than 6-inches. Cold-rolled prices are based on 2.25c to 2.35c, Pittsburgh-Cleveland.

Warehouse Sales Fair; Seasonal Effects Continue

Warehouse Prices, Page 103

New York—Jobbing demand is quiet and unchanged, with prices on blue annealed and galvanized sheets easier. Blue annealed sheets are now quoted at 3.20c to 3.40c and galvanized at 4.10c to 4.25c.

Philadelphia—Jobbers report continued slow demand, with prices unchanged.

Buffalo—Warehouse demand is decreasing as the holidays approach. Fourth quarter will be just about as disappointing as those of the other periods of 1930.

Pittsburgh—Warehouses look for some orders from buyers who are deferring mill purchases during the inventory period. The mill advance on bars, shapes and plates is expected to have no effect upon warehouse quotations.

Detroit—November business in warehouse products equaled that of October on a daily basis, with December showing no marked deviation. Current demand is slightly below the level of last January. Prices are steady and unchanged. Automotive purchases are light, but the outlook is brighter. Building is seasonally dull.

Cleveland — Activity for jobber stock continues at a mediocre rate. A slight, though temporary, upturn was noted in some quarters following the recent announcement of 1931 mill prices on bars, shapes and plates. Prices hold unchanged.

Cincinnati—Warehouse prices are unchanged, so far not reflecting increases for first quarter by the mills. Orders are light but the past week brought out a fairly active demand.

Operations' Average Continues on Toboggan

Youngstown, O. — Three sheet plants idle one week or longer, have resumed operations. General average remains unchanged at 43 per cent, compared with 48 per cent in the corresponding week of 1929. Favorable developments were resumption of operations at the Sharon Steel Hoop Co.'s Youngstown sheet plant, at Empire Steel Corp.'s Falcon plant and the Mahoning Valley Steel Co.'s sheet plant at Niles. Sheet & Tube and Carnegie report unchanged schedules. Republic Steel's activity, however, worked down five points to 40 per cent, compared with 45 per cent last week. Finishing mill losses accounted for the Republic decline. The pipe market continues inactive, with lapweld production, particularly, at a low rate.

Philadelphia—Eastern ingot production stands at 35 to 40 per cent capacity this week, compared with 40-43 per cent last. Shape mills operate at 50, plate mills at approximately 40 per cent capacities.

Buffalo — Open-hearth operations here are cut to 24 per cent of capacity, compared with 40 last week. This rate may be still further curtailed about Dec. 15. Several major finishing departments have suspended operations. The present operating rate is the lowest in many years.

Pittsburgh—Ingot production is off slightly at 35 to 40 compared with 40 per cent last week. Sheet operations are lower at 35, while tin plate is up slightly at 45. Strip is unchanged at 30, with pipe at 35.

Cleveland—Proving the exception for all districts reporting, ingot operations have been stepped up four points this week to 48 per cent capacity. Corrigan, McKinney Steel Co. operates at 50 per cent capacity. Sixteen of 34 district furnaces are on.

Chicago—Output of 45 per cent is well maintained in this district, with about 54 of the district's 120 open hearths active. Rail mills are at a 40 per cent rate, compared with 30 to 35 a week ago. On the other hand, sheet mills are off further.

Birmingham, Ala. — Open-hearth operations are the same as last week, with five going at Fairfield and four at Gadsden, operations of the district being estimated at between 40 and 43 per cent.

Concrete Awards

(*Concluded from Page* 85)

foundation, Boston, to Concrete Steel Co., New York.

120 tons, Philcade office building addition, Tulsa, Okla., to Tulsa Rolling Mills Inc., Tulsa.

110 tons, Harway avenue bridge, Brooklyn, N. Y.; to Kalman Steel Co., Chicago; W. H. Gahagan Inc., Brooklyn, general contractor.

100 tons, approaches to Snoqualmie river bridge, Washington, to Pacific Coast Steel Corp., Seattle.

Contracts Pending

500 tons, coast guard building, New London, Conn.; bids Dec. 19.

450 tons, seven buildings, Queens general hospital, New York; bids Dec. 12.

400 tons, highways, including route S1, section No. 3, New Jersey; bids in.

400 tons, federal penitentiary, Lewisburg, Pa.

220 tons, foundation, new municipal building, departments of health, hospital and sanitation at Worth, Center, Leonard and Lafayette streets, New York.

100 tons, normal school, Geneseo, N. Y.; H. J. Conrath, Erie, Pa., general contractor.

Montreal Group Convenes

Discussion of recent Canadian tariff revisions featured the annual meeting of the Montreal Metal and Hardware association, held Dec. 4 at Montreal. Elections were held and the following officers chosen: President, B. W. P. Coghlin, B. J. Coghlin Co. Ltd.; vice president, R. W. Bartram, R. W. Bartram Ltd.; and treasurer, Hector Prudhomme, A. Prudhomme et Fils Ltd.

Institute Denies Russian Manganese Is Dumped

(*Concluded from Page* 24)

small domestic production upon the fixing of prices is practically nil.

"Compared with the world consumption and production, the domestic production is negligible and it could neither affect nor be affected by world production and prices. The point of all this is that there is lacking in the manganese ore situation that other feature which is necessary under the statute to constitute the offense of dumping, namely, that an industry of the United States is being or is likely to be injured, or is prevented from being established.

"As the various figures heretofore given in this brief plainly show, the relative standing of the domestic manganese production to the foreign importation now is practically the same as it has ever been.

"It may be that the domestic manganese industry is now depressed, but what industry is not? It may be that manganese prices are lower than they have been, but what commodities have escaped the fall in prices? It is known to all that at the present time metals such as tin, copper, zinc, lead, and antimony are selling below their pre-war price, whereas manganese in point of fact is higher than its pre-war price. We have had access to the *Engineering and Mining Journal* for April 25, 1914, which quotes Caucasian manganese ore, c.i.f. United Kingdom ports, at 17 cents to 17½ cents per unit which is 1 cent higher than they were in 1912, whereas the quotations contained in STEEL, the *Iron Age* and *Stahl and Eisen*, hereinbefore mentioned, give the present price of Caucasian ore as 26 to 28 cents c.i.f. Atlantic ports, and 12 pence c.i.f. Antwerp.

"There are many wild assertions in the brief to which we are attempting a reply that are simply unworthy of notice and they deserve and will receive no attention. Where dumping is established the penalty falls on the importer and not on the exporter and the defendant in the case is always the one who enters the goods in the United States and not the foreign person or association who ships them. The penalties are visited upon the American importer and not upon the foreign exporter.

"On page 2 of the Manganese Producers' brief, the following appears, the reference presumably being to the steel industry of the United States:

> It purchased manganese abroad at a time when it might have purchased domestic manganese at prices much lower than that which is paid abroad. It has done in times of peace what—in time of war—would have been little short of treason.

"The same assertion is repeated in another form on page 5. This is absurdly untrue. No one can believe that American business men in a highly competitive industry would pay any more than the market price for any article or material no matter where it came from."

Pipe

Cast Inquiry Slightly Higher—158-Mile Line Up in South—Phoenix Wants 15,000 Tons

PIPE PRICES, PAGE 103

New York—Cast pipe inquiry is heavier. Lettings are light. Several utilities are expected to close on large tonnages before the first of the year. New York City is estimating early 1931 requirements. Prices generally are unchanged at $36 to $37, eastern foundry, but reports are that $35 has been done. Foundry backlogs are light. Some departments are not operating 50 per cent. More than 418 tons of 24-inch for Great Neck, L. I., is held up by court action on the general contract award. Rome, N. Y., will require some cast pipe for a sewage disposal plant.

Boston—Cast pipe contracts aggregated in excess of 5000 tons, developing one of the best weeks in a long period. Boston awarded 3500 tons of pipe and 200 tons of castings. Hanson, Mass., placed 1255 tons of 6 and 8-inch and an unstated tonnage of 10-inch. Several smaller lots also were let. Prices continue to hold.

Pittsburgh—Demand for tubular products continues below that of a month ago, although activity is little changed since the first of this month. Standard pipe business remains seasonally light. Oil country goods are in poor demand. Definite information on a number of prospective pipe lines is lacking and little tonnage for this purpose is looked for until well into 1931. Activity in mechanical tubing is off seasonally and locomotive and boiler tubes are moving slower. Pipe mill operations average around 35 per cent.

Cleveland—Delays have been encountered in the letting of the pipe and conduit contracts for the Higbee Co. store building here, the only large job up. Jobber buying is still confined to an occasional single carload.

Chicago—While prices for 6-inch and larger diameters of cast pressure pipe are holding for such private business as appears, municipal tonnage brings out some concessions. Tabulation of bids on the 1000 tons of 12-inch for Chicago board of local improvements shows a low of $35.50. Bids were in the first of the week for the 11,000 tons of 24 to 36-inch cast pipe for Detroit. Private orders are scarce. Uncertainty exists over prospects of utility buying, as some of the companies are known to have a carryover of gas and water pipe.

Tulsa, Okla.—United Pipe Line Corp., subsidiary of United Gas Co. of Houston, Tex., a Moody-Seagraves unit, has awarded contract for the construction of a natural gas line from Kirbyville, Tex., to Franklin, La., comprising 158 miles of 8 to

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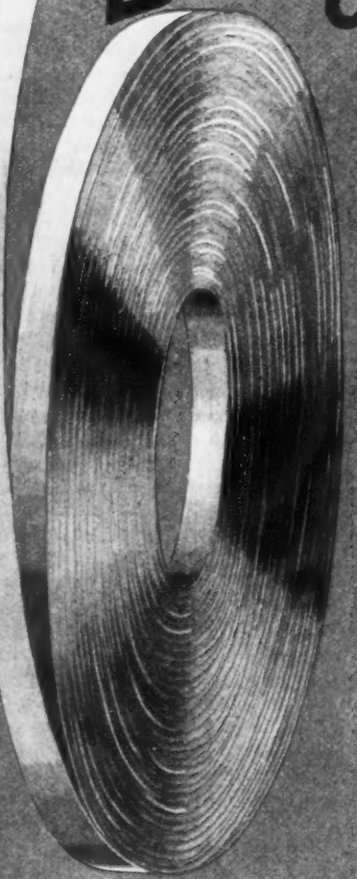

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by using SHARON HOT and COLD ROLLED STRIPS in electrical manufacturing.

Users of SHARON STRIPS, making electric products, are well acquainted with SHARON width and gauge accuracy. They know that SHARON quality works perfectly. No matter how intricate the shape, SHARON STRIPS are dependable for doing both the usual and the unusual—economically, quickly and satisfactorily.

Manufacturers have learned by pleasant past experience—here is a mill, built by customer satisfaction, that puts quality first.

Send us your inquiries!

Sharon Steel Hoop Company
Sharon, Pennsylvania

14-inch line pipe. Six lateral lines will be built to serve towns adjacent to the line.

Birmingham, Ala. — Shipments of cast pipe are steady but lettings have eased off and backlogs are reduced. Business in sight, however, is encouraging, including some from southern, western and northwestern sections. Base prices are unchanged, $37 to $38 for 6-inch or larger.

Contracts Placed

2150 tons, 6 to 16-inch cast pipe and 30 tons of special castings for Boston, to Warren Foundry & Pipe Co., Phillipsburg, N. J.

1350 tons, 8 to 20-inch high pressure cast pipe and 170 tons of special castings, for Boston, to Warren Foundry & Pipe Co., Phillipsburg, N. J.

1255 tons, 6 and 8-inch cast pipe for Hanson, Mass., to R. D. Wood & Co., Florence, N. J., with unstated tonnage of 10-inch.

300 tons, 6 and 12-inch cast pipe for Nashua, N. H., to Donaldson Iron Co., Emaus, Pa.

175 tons, cast pipe for Norwood, Mass., to McWane Cast Iron Pipe Co., Birmingham, Ala.

Contracts Pending

1100 tons 6 to 12-inch cast pipe for Phoenix, Ariz.; general contract to Schmidt & Hitchcock, Phoenix.

1000 tons, 12-inch cast pipe, also fittings, for Chicago; Glamorgan Pipe & Foundry Co., Lynchburg, Va., low at $43.50, delivered.

926 tons, 6 and 8-inch class 150 cast pipe for San Francisco; bids received.

410 tons, 24-inch class A cast pipe for Great Neck, N. Y.; also 19 tons reinforcing steel; Tuller Construction Co., Red Bank, N. J., low bidder; contract action under court review.

175 tons, 6 and 8-inch cast iron pipe for Spartanburg metropolitan sub-district B, Spartanburg, S. C.; Harwood Beebe Co., engineer; bids Dec. 16.

138 tons, 3 to 16-inch cast pipe, sewer, for Attica, N. Y., prison.

135 tons, 2-inch class 150 cast pipe, for Long Beach, Calif.; bids received.

115 tons, 4 to 12-inch cast pipe, department of public works, bureau of highways, Philadelphia; bids in Dec. 9.

100 tons, 2 to 8-inch class 150 cast pipe, improvement of River avenue, Phoenix, Ariz.; bids Jan. 5.

Unstated tonnage, one mile each 12 and 16-inch cast pipe for new water main for Whitefish Bay, suburb of Milwaukee; bids close late in December or early in January; T. F. Buckley is village engineer.

Steel Pipe Pending

13,900 tons 6 to 48-inch steel pipe for Phoenix, Ariz.; general contract to Schmidt & Hitchcock, Phoenix.

3000 tons, 38 and 51-inch welded steel pipe for Los Angeles; bids received.

1300 tons, 4 to 30-inch welded steel pipe for Howard Flat Irrigation District, Chelan, Wash.; bids Dec. 19.

Unstated tonnage, 158 miles of 8 to 14-inch steel line pipe for natural gas line from Kirbyville, Tex., to Franklin, La., United Pipe Line Corp., subsidiary of United Gas Co. of Houston, Tex., a Moody-Seagraves unit; general construction contract awarded.

Wire

New Prices Set at Pittsburgh —Jobbers Buying More Freely in West—Specifications Light

WIRE PRICES, PAGE 81

Pittsburgh—Quotations of 2.20c, Pittsburgh, on plain wire for first quarter have been made by an important producer, with 2.30c applying on current business. Buying for first quarter is slow and this change in price may quicken interest in that delivery. Wire nails to jobbers are $1.90c and to the trade $2, while wire rods are being quoted at $35 to $36, a leading maker quoting the lower figure. Specifications against old contracts are light and lack improvement over those a month ago.

Chicago—New prices on wire products announced here Dec. 6 are to be effective on all fresh tonnage. The nail quotation, Chicago or western mills, now is $2.05, while the bright plain wire base is 2.25c to 2.35c, with the Pittsburgh-Cleveland quotation $1 lower. Differentials on other wire products are unchanged from base except that the differential for barbed wire in 80-rod spools has been reduced from $3 to $1 a ton above the catch-weight base for galvanized barbed wire, which now is 2.65c.

Worcester, Mass. — Wire production and demand show little change. No indications of trend for first quarter have shown themselves. Plain bright wire to dealers is quoted firm at 2.40c, base, Worcester.

New York—The leading producer has announced a price of $2 a keg on nails to the general trade, effective at once and for first quarter. The $1.90, Pittsburgh, price to jobbers continues. Plain bright wire is steady at 2.30c, Pittsburgh.

Cleveland—Consumer needs seem well satisfied. Orders are small and deliveries slack, with annual inventory at hand. Some resumption is looked for after the first of the year. Inquiry is developing for first quarter on most wire products. Manufacturers' wire is 2.30c; nails, $1.90 and $1.95, more commonly the former. Wire rods have been reduced to $35 for first quarter by the leading seller in this district. Sellers look conservatively to late January to provide test for these prices.

Bolt, Nut, Rivet Prices Carry Into First Quarter

Bolts, Nuts, Rivets Prices, Page 81

Pittsburgh — First quarter contracts for bolts, nuts and rivets are being issued for customers' signatures. Prices are unchanged at 73 off for bolts and nuts, 2.75c for large rivets, and 70, 10 and 5 off for small rivets. Specifications are light and show some seasonal decline with jobbers holding stocks low over the balance of the year. Operations continue around 40 per cent.

New York—Bolt and nut sellers report little improvement in demand since November, when business reached a new low for the year. Operations at eastern plants are 35 to 40 per cent. Meanwhile, prices are unchanged at 73 off, with some perfunctory contracting for first quarter at that discount. Rivets continue at 2.75c, Pittsburgh, with decision likely this week as to what price will be quoted on next quarter business.

Chicago—Bolt and nut demand still suffers from the lack of implement tonnage. Indecision as to operating schedules for early 1931 production still marks the implement and tractor makers' attitude. First quarter contracting for bolts, nuts and rivets at extended fourth quarter prices is well started. Specifications are light and are about equivalent to the November rate, which was about 30 per cent under October business.

Semifinished Slow; Wire Rods Are Reduced

Semifinished Prices, Page 92

Pittsburgh—Occasional inquiry is appearing for semifinished steel, mainly for forging material. Producers have made no formal price announcement but usually quote $31 for rerolling material and $36 for forging billets. They quote $35 to $36 on wire rods for first quarter. Shipments against old contracts continue to decline and are moderately smaller than a month ago.

Cleveland—A price announcement on semifinished steel for first quarter is expected to be made by the leading merchant interest here this week. Shipments continue to be made at $31, base, Cleveland or Youngstown, O., for sheet bars, billets and slabs. This interest still operates six of its 14 open hearths. Wire rods are quoted at $35 to $36, base, Pittsburgh, for first quarter.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$17.50
Pittsburgh, district fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley, furnace	17.00
Cleveland fur., local del.	17.50
Philadelphia, delivered	18.26 to 18.76
Virginia, furnace	17.75
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail, Brooklyn	20.41 to 20.91
Buff., all-rail, Newark	18.78 to 19.28
Ala., Bir. fur., local del.	14.00
Alabama, del. Chicago	17.01 to 17.51
Alabama, del. St. Louis	14.42 to 15.42
Alabama, del. Cincinnati	14.69 to 16.19
Alabama, del. Cleveland	16.51 to 17.51
Ala., Phila., dock del.	16.75 to 17.25
Ala., Balt., dock del.	16.50 to 17.00
Alabama, New York dock	16.50
Ala., Boston dock del.	17.25
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cinn.	14.69 to 16.69
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	18.00
Buff., all-rail, Brooklyn	20.91 to 21.41
Buffalo, all-rail Newark	19.28 to 19.78
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del. Phila.	18.76 to 19.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	19.00
Eastern, del. Phila.	19.26 to 19.76

MALLEABLE

Chicago, furnace	17.50
Cleveland fur., local del.	17.50
Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13
Valley furnace	17.50
Buffalo fur., local del.	18.00
Eastern Penna., delivered	19.26 to 20.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Eastern Penn., del.	17.50 to 18.00
Buffalo fur., local del.	17.00
Montreal, delivered	20.50
Valley furnace	17.00

BESSEMER

Valley furnace	17.50
Pittsburgh, delivered	18.63 to 19.13
Pittsburgh, furnace	18.00

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	24.76 to 28.79
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14 $31; 15—$33; 16—$35.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.50 to 2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell. basis	5.50
Portsmouth, O., ovens, Connell. basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit, ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56 63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	11.00
North African low phosphorus	10.00
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	9.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$12.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	27 to 28 cents
Indian, 48-50% (nom.)	27 to 28 cents
Brazilian, 46-48% (nom.)	25 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43.00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	36.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00
Forgings, Philadelphia	41.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$35.00 to 36.00
Chicago	36.00 to 37.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-21%, domestic fur. spot†	30.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.12 to 1.15
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$17.25
Washed gravel, import duty paid east, tide, gross ton	19.50

Greetings and a Tribute

With pardonable pride, The J. B. Ford Company looks back over a record of more than thirty-three years,—a third of a century—of significant service to commerce and industry.

Anticipating the need of industry for scientific sanitation and cleanliness, the Wyandotte Products became the pioneers in the field of modern cleaning standards.

Outstanding in this record of successful accomplishment is the loyalty of our thousands of friends without whom our best efforts would have been of no avail.

Realizing this, we are sincerely glad at this goodwill season of the year to extend to our friends in every field of business activity our most hearty wishes for a

Merry Christmas and a Prosperous New Year

The J. B. Ford Co.
Wyandotte, Michigan

Pig Iron

Large Consumers Closing for First Quarter—Valley More Active—More Stacks Out

PIG IRON PRICES, PAGE 92

Pittsburgh—The pig iron market has a better tone as a result of increased interest in first quarter tonnage. Orders for prompt shipment still are small, individually and in the aggregate, but some sellers report forward buying is the best in a number of months. Production currently is light but for some interests it still exceeds shipments. Some inquiries extend through the first half. The Walworth Co. placed more than 1000 tons for first quarter. Prices are steady.

Boston—A Connecticut consumer placed 1000 tons with the Mystic Iron Works, Everett, Mass., other sales of the past week being much smaller. The total amounted to about 2500 tons.

New York—Pig iron sales declined to an aggregate of about 8000 tons in the past week. Most sales of Buffalo iron continue at $15.50 to $16, furnace. Southern iron is unchanged at $16.50, delivered New York docks. A. P. Smith Mfg. Co. is inquiring for 300 tons of No. 2 plain and No. 2X for Bloomfield, N. J., while another company is inquiring for 700 tons of 2½ to 3 per cent silicon iron, the latter for second quarter. Another consumer is reported to be inquiring for 2000 tons for delivery throughout next year. New York Air Brake Co. has been sounding the market.

The Thatcher Furnace Co. is inquiring for 3000 tons of No. 2 plain and No. 2X for New York and Garwood, N. J., plants. The E. & T. Fairbanks & Co., St. Johnsbury, Vt., has divided 1000 tons between New England and New York furnaces.

Buffalo—Only four blast furnaces now are making iron in this district, following the banking of one over the week end. There may be one or two more withdrawn from the active list before Jan. 1.

Philadelphia—Central Foundry Co. has purchased 2000 tons of foundry iron for Lansdale, Pa., and Dundalk, Md.; Burnham Boiler Corp. has placed 500 tons of foundry for Lancaster, Pa., and the Foran Foundry, Flemington, N. J., has bought 2000 tons of foundry. Southern makers sold a fair tonnage in this district at $11, base, Birmingham. Boston navy yard will open bids Dec. 19 on 200 tons of foundry iron. Eastern Pennsylvania foundry continues $17.50 to $18, base, furnace, for this district. Some Buffalo malleable has been sold here at $16, Buffalo. Buffalo foundry iron in stock at Jersey City, N. J., is bringing $17.50 to $18, base, Jersey City, for rail shipment in this district.

Youngstown, O.—Small lots of pig iron are being shipped from valley furnaces. No. 2 foundry holds at $17, valley, and malleable at $17.50.

Cleveland—A substantial portion of the large inquiry pending a week ago has been placed and new inquiry has subsided. Furnace interests with headquarters in Cleveland booked 15,000 tons for first quarter. Individual orders are larger than recently, ranging from 1000 to 3000 tons. A radiator company is obtaining prices on 3000 to 4000 tons for two plants. Osborn Engineering Co., Cleveland, is taking bids Dec. 18 on 62,000 malleable iron and wood seats for the new municipal stadium, requiring about 560 tons of castings. Westinghouse Electric & Mfg. Co. has not yet closed for Cleveland and Trafford City, Pa., requirements. Prices are steady, the minimum for shipment from lake furnaces to competitive territory being $16, base, furnace, while Cleveland makers quote $17.50 for local delivery.

Cincinnati—Total sales of pig iron have exceeded 2500 tons, with one melter closing for 1000 tons of northern iron for first quarter. Part of the order went to a lake furnace.

Birmingham, Ala.—Practically all pig iron business is in small lots. A little tonnage has been sold in the Middle West for delivery next year. Sloss-Sheffield Steel & Iron Co. is blowing out its North Birmingham stack, and Republic Steel Corp. is planning to blow out one of its stacks this month.

St. Louis—Recent sales of southern iron have been made in this district at $10.25, base, Birmingham, the lowest price yet noted. Carloads are offered freely at $10.50. The leading local producer continues to quote $17.50, base, furnace, and Chicago iron is $17.50, base, furnace.

Chicago—Furnaces have rounded up nearly a score of 1000-ton and heavier orders in the past few days. Much tonnage is under negotiation and the volume is close to the heavy buying of the last two weeks. Shipments are falling off from last month. Resale iron in occasional small lots is offered at concessions. The base grade remains $17.50, Chicago.

Ferromanganese Reduced $14 a Ton for 1931

Ferroalloy Prices, Page 92

New York—The Electro Metallurgical Sales Corp., New York, has announced $85, duty paid, tidewater, as its carload price on standard 78 to 82 per cent ferromanganese for 1931. This is a reduction of $14 from the present carload price of $99. This marks the most sweeping price concession on ferromanganese since 1922. In September of that year the market was $67.50, tidewater, or $72.29 delivered at Pittsburgh. In that month the duty of 1⅞ cents per pound on manganese content became effective and the price jumped to $105.47, delivered Pittsburgh.

As a matter of fact, the new price is the lowest c.i.f. price that has been quoted since 1914. In July, 1914, at a time when there was no tariff, ferromanganese was as low as $37.50 f.o.b. Baltimore. The newly announced carload price for 1931 is equivalent to $51.40 c.i.f. Baltimore. This involves a reduction of $33.60 based on the duty of 1⅞ cents per pound on the 1792 pounds of manganese contained in a gross ton of 80 per cent ferromanganese. Other domestic makers have adopted the new price.

Domestic spiegeleisen, 19 to 21 per cent, continues at the new price of $30, furnace, subject to differentials.

Most of the special ferroalloys are unchanged on contracts for 1931, but reductions are being made on low carbon ferrochrome and silico-manganese. High carbon ferrochrome is unchanged, while the reductions of ½-cent to 1½ cents in low carbon are in line with cuts that have been made from year to year for several years.

Contracts for maximum 2 per cent carbon ferrochrome are cut from 17.50c to 17.00c a pound contained, and the spot price will be 17.50c; maximum 1 per cent carbon from 20.00c to 19.00c, with spot at 20.00c; maximum 0.1 per cent cut from 26.00c to 24.50c on contract, with spot 26.00c.

Silico-manganese prices are cut $15 a ton. This makes 2½ per cent carbon $120 gross ton for contracts and $125 for spot; maximum 1 per cent, $130 for contracts and $135 for spot. All are on basis of freight allowed.

Pittsburgh—Ferromanganese has been reduced from $99 to $85, or $89.79, delivered Pittsburgh, for 1931 tonnage in carload lots. This follows a recent reduction in spiegeleisen of $3 a ton to $30, furnace.

Chicago—Little interest is being shown in the spiegeleisen market, despite announcement of a reduction of $3 a ton in carload lots.

Scrap

Price Adjustments Bring Little Change in Level—Some Interest Shown in Future Needs

Chicago—Interest in iron and steel scrap, as manifested by numerous inquiries, enlivens the market despite light trading and absence of unfilled orders. Dealers are awaiting announcement of prospective purchases from larger melters. Inquiries the last few days in five to ten carloads each have been more active than in many weeks. The general feeling that the price decline has reached its limit apparently has been an impetus for inquiries from a number of foundry melters. Some inquiries ask prices for shipment after the first of the year. A flurry resulted in the market from the announcement of a Chicago scrap interest that it would purchase melting steel at $11 against steelworks orders. The price list was sent out to that effect, subject

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	9.50 to 11.00
Boston, dealers	6.50 to 7.00
Buffalo, No. 1	10.75 to 11.25
Buffalo, No. 2	9.25 to 9.75
Chicago	10.00 to 10.50
Cinci., deal.	9.50 to 10.00
Cleve., No. 1	10.50 to 11.00
Cleve., No. 2	9.75 to 10.25
Det. No. 1 deal.	9.50 to 10.00
Det., No. 2 deal.	7.00 to 7.50
E. Pa. del. mill	11.00 to 11.50
N. Y. del. R. R.	7.50
N. Y. deal. No. 2	5.50
N. Y., deal. yd.	5.50
Pitts., No. 1	12.50 to 13.00
St. L. No. 1 sel.	10.50 to 11.00
Federal, Ill.	9.50 to 10.00
Granite C., Ill.	9.00 to 9.50
Valleys, No. 1	12.50 to 13.00

COMPRESSED SHEETS

Buffalo, dealers	9.25 to 9.75
Chicago	8.75 to 9.25
Cleveland	9.00 to 9.50
Detroit, dealers	8.75 to 9.25
E. Pa. new mat.	10.00 to 10.50
Pittsburgh	12.00 to 12.50
Valleys	12.00 to 12.50

BUNDLED SHEETS

Buffalo	7.00 to 7.50
Cinci., deal.	8.75 to 9.25
Cleveland	7.00 to 7.50
Eastern Pa.	9.00
Pittsburgh	10.00 to 10.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	5.50 to 6.00
Cincinnati	5.00 to 5.50
Detroit, dealers	6.50 to 7.00
St. Louis	5.50 to 6.00

STEEL RAILS SHORT

Birmingham	12.00 to 12.50
Boston, dealers	5.50 to 7.00
Buffalo	14.00 to 14.50
Chicago (3 ft.)	12.00 to 12.50
Chicago (2 ft.)	12.50 to 13.00
Cinci., deal.	15.50 to 16.00
Detroit, deal.	12.50 to 13.00
Pitts. (open-hearth, 3 ft. and less)	14.50 to 15.00
St. Louis	13.50 to 14.00

STOVE PLATE

Birmingham	8.50 to 9.00
Boston, con.	8.00 to 8.50
Buffalo	9.00 to 9.25
Chicago, net	6.50 to 7.00
Cinci., deal. net	5.25 to 5.75
Det., net, deal.	6.25 to 6.75
Eastern Pa.	9.00
N. Y., deal. mill	4.75
St. Louis	8.00 to 8.50

COUPLERS, SPRINGS

Buffalo	13.50 to 14.00
Chicago	12.00 to 12.50
Eastern Pa.	16.00 to 16.50
Pittsburgh	16.00 to 16.50
St. Louis	11.00 to 11.50

ANGLE BARS—STEEL

Chicago	12.00 to 12.50
St. Louis	9.50 to 10.00

LOW PHOSPHORUS

Buff., billets and bloom crops	15.00 to 15.50
Cleveland bil. and bloom crops	16.50 to 17.00
Eastern Pa.	17.00
Pittsburgh billet, bloom crops	17.50 to 18.00
Pitts. sheet bar crops	16.00 to 16.50

FROGS, SWITCHES

Chicago	10.00 to 10.50
St. Louis	10.50 to 11.00

SHOVELING STEEL

Chicago	10.00 to 10.50
Cleveland	6.75 to 7.25
St. Louis	9.50 to 10.00

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	8.50 to 9.00
Buffalo, No. 2	11.00 to 11.50
Chicago, No. 1	10.00 to 10.50
Chicago, No. 2	10.00 to 10.50
Cinci., No. 2	9.50 to 10.00
Eastern Pa.	13.50
N. Y., No. 1 deal.	10.00 to 10.50
Pitts., No. 2	12.50 to 13.00
St. Louis, No. 1	7.75 to 8.25
St. Louis, No. 2	9.50 to 10.00

SPECIFICATION PIPE

Boston	6.50 to 7.00
Eastern Pa.	11.50 to 12.00
N. Y., deal	7.25 to 7.50

BUSHELING

Buffalo, No. 1	9.25 to 9.75
Chicago, No. 1	8.00 to 8.50
Cinn., No. 1 dl.	8.00 to 8.50
Cinn., No. 2	4.50 to 5.00
Cleve., No. 2	6.00 to 6.50
Det., No. 1 new deal.	8.25 to 8.75
St. L. No. 1	7.00 to 7.50
Val. new No. 1	12.00 to 12.50

MACHINE TURNINGS

Birmingham	7.50 to 8.00
Boston, dealers	2.00 to 2.50
Buffalo	6.00 to 6.50
Chicago	4.25 to 4.75
Cinn., deal.	4.50 to 5.00
Cleveland	4.75 to 5.25
Detroit	3.75 to 4.25
Eastern Pa.	6.50 to 7.50
N. Y., deal.	4.00
Pittsburgh	6.00 to 6.50
St. Louis	4.00 to 4.50
Valleys	6.00 to 6.50

BORINGS AND TURNINGS For Blast Furnace Use

Boston	2.00 to 2.10
Buffalo	7.00 to 7.50
Cinn., deal.	4.50 to 5.00
Cleveland	6.75 to 7.25
Detroit, deal	4.75 to 5.25
Eastern Pa.	6.00 to 7.00
N. Y., deal.	3.00
Pittsburgh	7.00 to 7.50

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	7.50 to 8.00
Boston., chem.	9.00 to 9.50
Boston, deal.	2.00 to 2.50
Buffalo	7.00 to 7.50
Chicago	4.50 to 5.00
Cinn., deal.	4.50 to 5.00
Cleveland	6.75 to 7.25
Detroit, deal	4.75 to 5.25
Eastern Pa.	7.00 to 7.50
E. Pa., chem.	14.00 to 14.50
N. Y., deal.	3.50
Pittsburgh	7.00 to 7.50
St. Louis	6.00 to 6.50

PIPE AND FLUES

Cinn., deal.	7.50 to 8.00

RAILROAD GRATE BARS

Buffalo	7.00 to 7.50
Chicago net	6.50 to 7.00
Cincinnati	7.00 to 7.50
Eastern Pa.	9.00 to 9.50
N. Y., deal.	6.00
St. Louis	7.50 to 8.00

FORGE FLASHINGS

Boston, deal.	6.00 to 6.25
Buffalo	9.25 to 9.75
Cleve. ov. 10 in.	9.00 to 9.50
Detroit	8.50 to 9.00

FORGE SCRAP

Boston, del.	5.50 to 6.00
Chicago	13.50 to 14.00
Eastern Pa.	11.00

ARCH BARS, TRANSOMS

Chicago, net	11.50 to 12.00
St. Louis	11.50 to 12.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	10.50 to 11.00
Chi., steelworks	6.50 to 7.00
Cleveland	9.50 to 10.00
Eastern Pa.	9.50 to 10.00
Pittsburgh	11.00 to 11.50
St. Louis	7.50 to 8.00

STEEL CAR AXLES

Birmingham	14.00 to 15.50
Boston, ship. pt.	14.00 to 15.00
Buffalo	15.50 to 16.00
Chicago	15.10 to 15.70
Eastern Pa.	20.50
St. Louis	14.00 to 14.50

SHAFTING

Bos., ship. pt.	13.00 to 13.50
Chicago	12.90 to 13.45
N. Y., deal.	13.00 to 14.00
St. Louis	12.00 to 12.50

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.00 to 13.50
Buffalo, steel	13.50 to 14.00
Chicago, iron	11.50 to 12.00
Chi., roll steel	13.50 to 14.00
Cincinnati, iron	10.50 to 11.00
E. Pa. steel	15.50 to 16.00
E. Pa. iron	14.00 to 14.50
Pitts., iron	13.50 to 14.00
Pitts., steel	16.00 to 16.50
St. Louis iron	10.50 to 11.00
St. Louis, steel	13.00 to 13.50

NO. 1 CAST SCRAP

Birming., cup.	10.00 to 10.50
Buffalo (mac.)	10.50 to 11.00
Boston, textile	11.50 to 12.50
Chicago, mach.	10.65 to 11.20
Chi., railroad	10.10 to 10.65
Chicago, agri.	9.50 to 10.10
Cinn., mach. cup., gross	13.50 to 14.50
Cleve. cupola	12.00 to 12.50
Det., net deal.	8.50 to 9.00
E. Pa. cupola	12.50 to 13.00
N. Y. cup. deal.	8.00 to 8.50
N. Y., del. local foundries	14.00
Pitts., cupola	12.50 to 13.00
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma.	9.75 to 10.25
St. L. No. 1	9.00 to 9.50

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	11.50 to 12.50
Buffalo, break	7.00 to 7.50
Cleve., break	6.50 to 7.00
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	6.50 to 7.00
Eastern Pa.	11.00
N. Y. No. 1 dl.	7.00 to 8.00
N. Y. break. dl.	7.00
Pittsburgh	9.00 to 9.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	13.00 to 13.50
Chicago, agri.	11.00 to 11.50
Chicago, R. R.	12.00 to 12.50
Cinn., R. R. dl.	12.00 to 12.50
Cinn., agri., dl.	12.00 to 12.50
Cleve., rail	12.50 to 13.00
Det. auto deal.	11.00 to 11.50
St. Louis, rail	10.00 to 10.50

RAILS FOR ROLLING 5 feet and over

Birmingham	11.25 to 11.75
Boston	8.50 to 9.00
Buffalo	10.00 to 10.50
Chicago	13.00 to 13.50
Eastern Pa.	13.00 to 13.50
New York	9.50 to 10.00
St Louis	11.25 to 11.75

LOCOMOTIVE TIRES

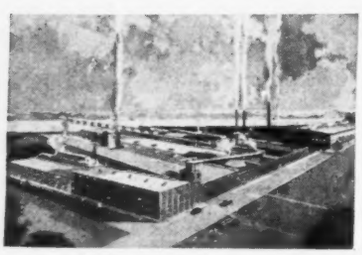
Chicago, cut	13.00 to 13.50
St. L. No. 1	11.00 to 11.50

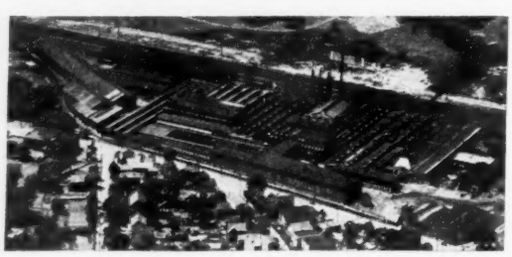
LOW PHOS. PUNCHINGS

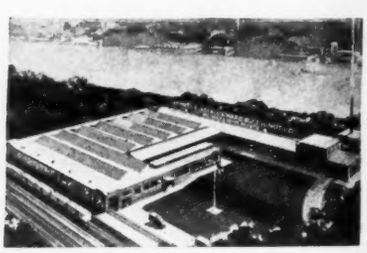
Chicago	12.00 to 12.50
Pittsburgh	15.00 to 15.50
Eastern Pa.	16.00 to 17.00
Buffalo	14.00 to 14.50

CONCENTRATION

A SPECIALIST may be, as a wit once said, "a man who knows more and more about less and less," but to do one thing supremely well is still an ideal of a high order. From its very inception, 85 years ago, this company has concentrated on one objective only . . . to make better nuts and bolts, so that in ordering the Empire brand you may be certain of getting what you want: *the best*, when you want it: *instantly*.





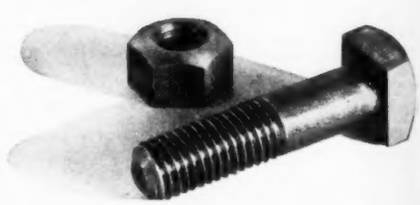


RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

ROCK FALLS, ILL. PORT CHESTER, N. Y. CORAOPOLIS, PA.

Philadelphia Chicago Detroit San Francisco Los Angeles Seattle Portland

EMPIRE
BOLTS & NUTS



to prior purchase, but it is understood steelworks consumers have not purchased and the price announcement failed to establish definitely the $11 quotation. The nominal range quoted in the last few days has been $10 to $10.50. Machine shop turnings were sold to an Indiana consumer under $5.

Boston—Four or five grades of scrap underwent further slight changes in the past week, but principally as a result of lack of business. Sellers are reluctant to sell materials, while brokers and dealers find no demand.

New York—Following a purchase by a West Mahway, N. J., consumer at $8, delivered, dealers have reduced their prices on foundry stove plate to $5.25, New York. This is the only change in an otherwise dull and featureless market. Shipments for Claymont, Del., and Phoenixville, Pa., continue to be held up.

Philadelphia—A fair tonnage of steel and iron scrap continues to change hands. While several grades are lower they have simply been adjusted to the general level, which is substantially unchanged.

Buffalo—The scrap market is dull following complete suspension of deliveries to Bethlehem and other large consumers here. A railroad list was taken locally at $11.25, delivered, for best No. 1 steel. Several other materials are affected by suspend shipment orders, turnings being about the only deliverable material. Prices are nominally lower although there have been no confirming sales.

Cleveland—Steel and iron scrap dealers continue to add to yard stocks, which are already heavy. Most of this scrap is being laid down for speculative purposes at $1 to $2 under prevailing quotations in anticipation of a stronger market after the first of the year. Other than yard stocks, the supply of scrap is negligible. Dealers look for an advance following the holidays. Steelworks consumers remain out of the market. Demand from foundries is also slow. Quotations continue unchanged. Little scrap is moving to the valley.

Detroit—Steel and iron scrap generally continues the tendency toward weakness, but on a less pronounced basis. Demand from Pittsburgh, Youngstown and Cleveland melters is light. Improved operations at some automotive plants are increasing offerings slightly. Water shipments to Buffalo have ceased. The local steelworks continues to operate only two open hearths, but is accumulating scrap .

Cincinnati—The level of scrap prices is lower as mills approach inventory disinclined to supplement stocks. Heavy melting steel is off 50 cents to $9.50 to $10.

St. Louis—Iron and steel scrap prices remain steady, with trading quiet. A slightly firmer tone has developed, due to smaller offerings by railroads and other sources of supply. There are some inquiries from consumers, but prices named are too far below dealers' views to result in business. Dealers believe prices are at bottom, and are unwilling to go short at prevailing levels.

Pittsburgh—Steel and iron scrap is sluggish and consumers are not interested in new tonnages. Heavy melting steel is holding well at $12.50 to $13 but is in poor demand with little prospect of much buying before the end of the year. Pennsylvania railroad scrap brought lower prices than in November for unprepared material, with no heavy melting steel offered.

Birmingham, Ala.—Sales of iron and steel scrap are small. Heavy melting steel is maintaining $11 as maximum for delivery in home territory.

Toronto, Ont.—While trading continues dull in iron and steel scrap, there are indications of improvement in iron grades. Mills are out of the market for steel grades and sales for the week were negligible. Foundry buying was more active with best demand being for machinery cast. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Coke

Foundry Fuel Shipments Steady —Interest in Furnace Grades Lacking—Domestic Quieter

COKE PRICES, PAGE 92

Pittsburgh—Beehive coke continues fairly active for heating purposes, but is in light demand for metallurgical use. Industrial domestic requirements for heating fuel are somewhat lighter since a moderation in weather conditions, but is moving relatively better than furnace or foundry grades. No interest is shown in furnace coke; foundry coke demand is steady but seasonally light. Prices are unchanged.

Beehive coke production in the Connellsville district during the week ending Nov. 29 was 16,050 tons, against 16,200 tons the preceding week, and 42,200 tons the corresponding week of last year, according to the *Connellsville Courier*.

Boston — Contract shipments to foundries are steady but no new interest is noted in the market. Production has been increased slightly to take care of domestic demands.

New York—Coke demand is sluggish and prices are unchanged.

Cincinnati—Specifications for by-product foundry coke this month have been light, in some cases probably indicating plans for foundry closings during inventory period. A sale of 5000 tons of foundry coke for delivery in the next six months to a southern Ohio interest is reported.

St. Louis—Resumption of part-time operations at foundries which had been idle has resulted in a moderate increase in coke shipments. Prices are steady.

Birmingham, Ala.—Shipments to foundries and furnaces have eased off slightly. New sales are small. By-product foundry coke continues $5, base, Birmingham.

Magnesium Cut to 48c

Dow Chemical Co., Midland, Mich., has reduced magnesium to 48 cents per pound in lots of 100 pounds or larger. In 1915 magnesium averaged $5 per pound, and the current reduction is the second this year. Consumption of magnesium, used as an alloy for steel especially to reduce weight, increased from 48,000 pounds in 1921 to over 900,000 pounds in 1929.

Pacific Coast

Northwest Projects Promise Activity—Pipe Line Activity Helps in California Field—Most Buying Is from Stock—Los Angeles Pipe Line Requires 3000 Tons of Plates—Prices Are Steady

Seattle—Indications are favorable for renewed activity in iron and steel, judging by the number of important projects proposed in the Pacific Northwest. The market expects little business this month, although cast iron pipe agencies have many inquiries and canners are beginning to place tin plate requirements for next season. The outlook is regarded as much improved compared with a month ago.

Bars, Plates and Shapes

Demand for reinforcing material has been confined to lots less than 100 tons but local mills have considerable work on hand which may run through the holidays. There is some railroad inquiry for track plates and spikes but no additional orders have been placed. Merchant bars are slow. Reinforcing prices are unchanged at 2.30c, merchant bars at 2.25c. Pacific Coast Steel Corp., Seattle, has booked about 100 tons of concrete bars for approaches to the state bridge over the Snoqualmie river, Wash. Northwest Steel Rolling Mills, Seattle, took a small tonnage for the A. J. Eberharter warehouse.

Plate awards this week were confined to one contract, 200 tons involved in water tanks and towers for Olympia, Wash., awarded to the Pittsburgh-Des Moines Steel Co., Seattle. Bids will be opened Dec. 19 for the Howard Flat Irrigation district, Chelan, Wash., requiring about 1300 tons of 4 to 30-inch welded steel pipe and 300 tons of accessories. Mill prices are quoted at 2.15c, although desirable tonnages might be obtained at 2.10c.

Isaacson Iron Works, Seattle, has closed for about 700 tons of fabricated materials, including 225 tons for the Snoqualmie river bridge, Washington, and 450 tons in miscellaneous jobs. Tonnages pending include 300 tons for the framework for a warehouse at the navy yard, general contract to the Newport Construction & Engineering Co., Newhall, Va., and 203 tons for a second warehouse at the navy yard. Wallace Bridge & Structural Steel Co., Seattle, has taken a small tonnage involved in two industrial buildings for A. J. Eberharter, Seattle. Steel for the Little Klickitat bridge, Washington, about 100 tons, general contract to L. J. Duff, Seattle, is also pending.

Finished Materials

Wholesale jobbers are practically marking time as business is slow and orders are only for immediate needs and of small proportions. All buying at present is out of stock. November's totals were considerably less than October and no improvement is expected this month. Sheets are in fair demand but there is less buying than a month ago. Warehouse prices of galvanized sheets have been reduced from 5.50c to 5.00c and black from 5.00c to 4.50c while blue annealed are unchanged at 4.00c. These revised prices apply in Portland territory as well as here and were adopted to reduce the spread, which was regarded as too wide.

Pipe Needs on Increase

Representatives of cast iron manufacturers have many inquiries, most from municipalities anticipating next year's requirements. Some of these awards will be let this month. About 50 tons of cast iron pipe for Kelso Wash., was awarded to the Pacific States Cast Iron Pipe Co. Seattle has authorized a 2½-mile extension to the Beacon avenue water main at a cost of $60,000. Tacoma has approved an 18-inch trunk water main at Yakima avenue, to cost $50,000. North Vancouver, B. C., has appropriated $25,000 for 6 and 8-inch cast main extensions. Local cast iron agents report a fairly good business out of stock in small tonnages.

Old Materials

Steel scrap is slightly weaker and receipts continue heavy for the season. Local stocks are unusually large. Both steel and cast iron are nominally quoted at $9 a gross ton.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Pipe Line Goes Concrete

San Francisco—(*By Air Mail*)—Movement of steel products is light and with the approach of the holidays and inventory-taking it is expected movement will be further curtailed. Bids were opened on a large pipe line project in Phoenix, Ariz., and it is reported that most of the pipe will go reinforced concrete.

Bars, Plates and Shapes

Awards of concrete bars, while aggregating 2492 tons, were in lots of less than 100 tons. Pending business, however, involves more than 5000 tons, most of which probably will be placed within the next two weeks. Los Angeles and San Francisco out-of-stock quotations remain unchanged at 2.50c, base, on carload lots. Mild steel bars continue to move in small lots. Prices are somewhat firmer and 2.25c, c.i.f., now appears general.

The Western Pipe & Steel Co. submitted the low bid to fabricate over 3000 tons of plates for a 38 and 51-inch welded steel pipe line for Los Angeles. Phoenix, Ariz., has opened bids on a large pipe line project on which alternate bids were taken on welded steel, reinforced concrete and cast iron pipe. It is reported that concrete pipe will be used, except for the distributing system, which will be cast iron pipe. Quotations continue to range from 2.05c to 2.15c, c.i.f.

Important structural lettings included 950 tons for the Paramount theater in Oakland, Calif., placed with the Moore Drydock Co., Oakland, Calif., 900 tons for an office building in Phoenix, Ariz., secured by the Kansas City Structural Steel Co., Kansas City, Mo., and 521 tons for the First Street bridge, San Diego, Calif., taken by the Virginia Bridge & Iron Co., Roanoke, Va. New inquiries were confined to lots of less than 100 tons. Bids have been opened on 108 tons for a bridge over Richardson bay, Calif. Prices on plain shapes range from 2.15c, to 2.25c, c.i.f.

Other Finished Material

Cast iron pipe lettings involved small lots only. Los Angeles, it is reported, will place 3336 tons within the next few days. Long Beach and San Francisco have opened bids on 136 tons and 926 tons, respectively. Bids will be opened Jan. 5 by Newport Beach, Calif., for 100 tons.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

	Steel		Iron		
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	⅛	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill

Random lengths over 5 ft. 55%
Selected lengths, 1 to 18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir..... $37.00 to 38.00
Four-inch, Birmingham..... 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago..... 45.20 to 46.20
Six-inch and over, N. Y. .... 38.50 to 40.50
Four-inch, New York ..... 41.50 to 42.50
Stand. fittings, Bir. base..... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga..	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York†† ..	3.10c
Philadelphia .	2.60c
Pittsburgh	2.75c
Portland	3.15c
San Frans. ..	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.00c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga..	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York†† ..	3.10c
Philadelphia .	2.60c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore 2.50c-	3.31c
Boston	3.265c
Buffalo	2.95c
Chattanooga..	3.10c
Cincinnati	3.15c
Cleveland ..2.25c-	2.44c
Detroit	3.00c
Houston	3.00c
Los Ang. cl....	2.40c
Los Ang. lcl..	2.70c
New York..2.65c-	3.10c
Phila. 2.40c-	3.00c
Pittsburgh	2.75c
San Fran. cl.	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young. 2.30c-	2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia .	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga..	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland. ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles..	3.40c
New York	3.30c
Philadelphia .	2.50c
Phila. floor....	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	9.915c
Buffalo	3.50c
Chattanooga..	3.60c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York....3.20c-	3.40c
Portland	4.00c
Phila.*†	3.05c
Pitts.**	2.75c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.95c

NO. 24 BLACK

Balt.*†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	4.05c
Clev.***	3.75c
Detroit	3.75c
Los Ang.	4.70c
New York...3.55c-	3.65c
Phila.*†	3.60c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.35c
Seattle	4.50c
St. Louis	4.05c
St. Paul	3.545c
Tulsa	4.10c

NO. 24 GAL. SHEETS

Balt.*†	4.25c
Boston	5.45c
Buffalo 4.40c-	4.60c
Chicago (local del.)	4.35c
Chicago (outside)	4.35c-4.60c
Cincinnati	4.90c
Cleveland***..	4.35c
Detroit	4.25c
Houston	5.40c
Los Ang.	5.10c
New York....4.10c-	4.25c
Phila.*†	4.15c
Pitts.**	4.00c
Portland	5.00c
San Fran.	5.00c
Seattle	5.00c
St. Louis	4.60c
St. Paul	4.23c
Tulsa 4.60c-	4.75c

BANDS

Baltimore	3.50c
Boston 4.015c-	5.00c
Buffalo	3.50c
Chattanooga..	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter....	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia .	2.90c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.75c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston 5.50c-	6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter ..	3.80c
New York	3.75c
Philadelphia .	3.15c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.70c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)....	4.75c
St. Paul (a)..	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

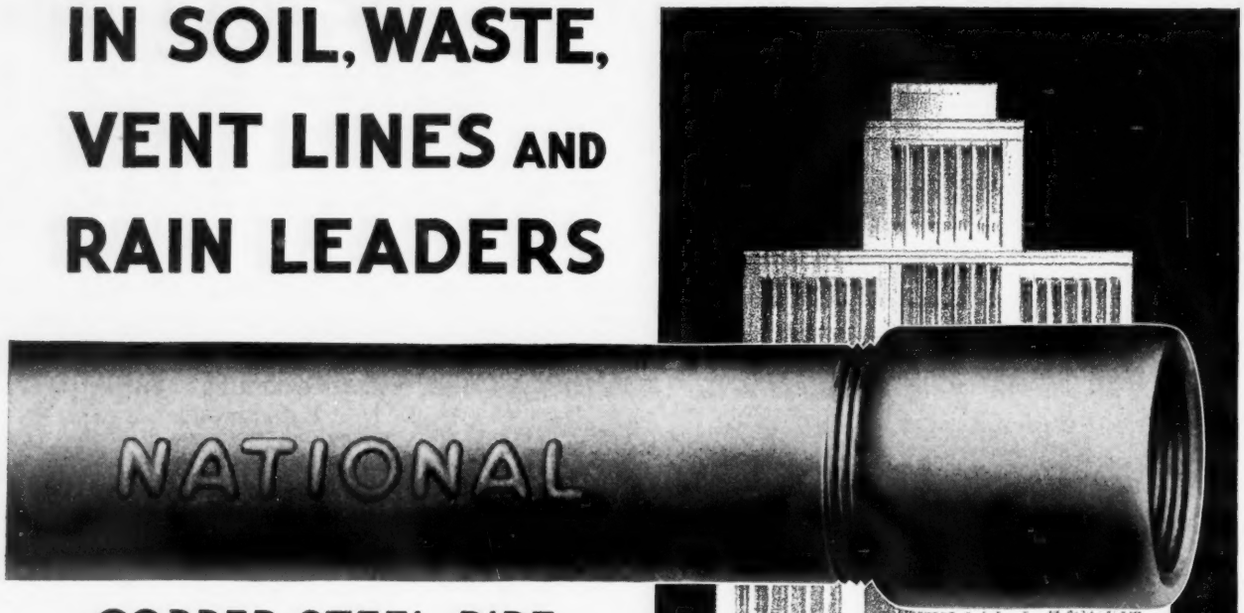
COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)..	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
Phila. (c).....	4.85c
New York	5.05c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

RESISTS CORROSION

IN SOIL, WASTE, VENT LINES AND RAIN LEADERS



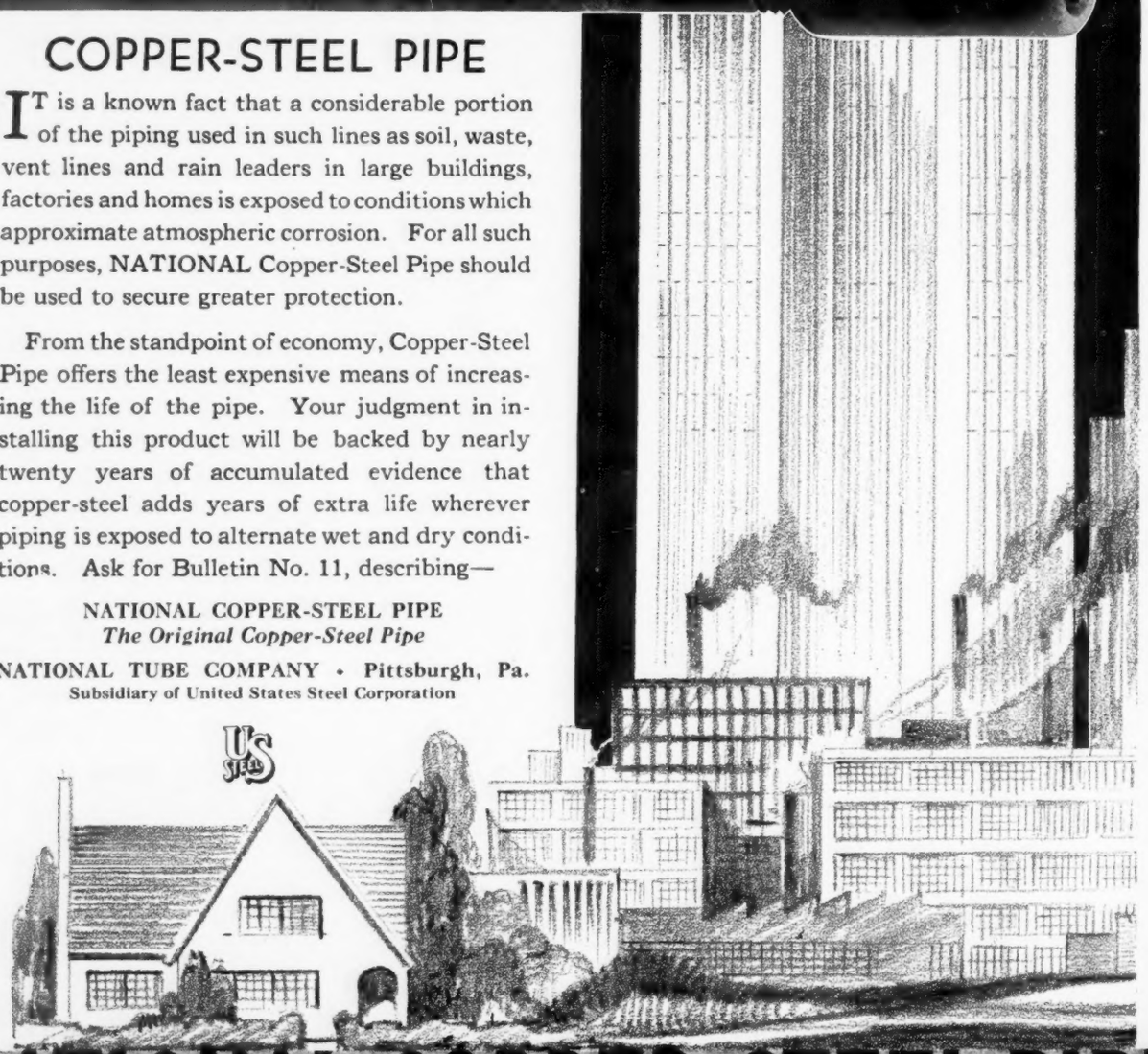
COPPER-STEEL PIPE

IT is a known fact that a considerable portion of the piping used in such lines as soil, waste, vent lines and rain leaders in large buildings, factories and homes is exposed to conditions which approximate atmospheric corrosion. For all such purposes, NATIONAL Copper-Steel Pipe should be used to secure greater protection.

From the standpoint of economy, Copper-Steel Pipe offers the least expensive means of increasing the life of the pipe. Your judgment in installing this product will be backed by nearly twenty years of accumulated evidence that copper-steel adds years of extra life wherever piping is exposed to alternate wet and dry conditions. Ask for Bulletin No. 11, describing—

NATIONAL COPPER-STEEL PIPE
The Original Copper-Steel Pipe

NATIONAL TUBE COMPANY • Pittsburgh, Pa.
Subsidiary of United States Steel Corporation



NATIONAL COPPER-STEEL PIPE

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 12.00c, Conn., for copper

Sheets	
Yellow brass (high)	18.62½
Copper, hot rolled	21.75
Lead, full sheets (cut ½c more)	9.00
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	23.50
Seamless copper	24.12½
Rods	
Yellow brass (high, full turnings)	16.87½
Naval brass	19.00
Anodes	
Copper, untrimmed	19.25
Wire	
Yellow brass (high)	19.12½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	7.25 to 7.50
Chicago	7.00 to 7.25
Cleveland	7.50 to 8.00
St. Louis	7.25 to 7.50
Heavy Yellow Brass	
New York	5.00 to 5.25
Heavy Copper and Wire	
New York	8.00 to 8.50
Boston	8.00 to 8.25
Chicago	7.75 to 8.50
Cleveland	7.00 to 7.50
St. Louis	7.00 to 7.50
Red Brass Borings	
New York	6.75 to 7.00
Yellow Brass Tubing	
Cleveland	5.00 to 5.25
Light Copper	
New York	7.00 to 7.50
Chicago	6.75 to 7.25
Cleveland	6.50 to 7.00
St. Louis	6.75
Light Brass	
Boston	4.00 to 4.25
Chicago	4.25 to 4.50
Cleveland	3.50 to 4.00
St. Louis	4.00 to 4.25
Zinc	
New York	2.00 to 2.25
Cleveland	1.50 to 1.75
St. Louis	2.00
Aluminum	
Clippings, soft, Cleveland	12.00 to 13.00
Clippings, hard, Cleveland	8.00 to 9.50
Borings, Cleveland	5.00 to 5.50
Mixed cast, Cleveland	6.00 to 6.50
Mixed cast, Boston	5.50 to 6.00
Mixed cast, St. Louis	6.00

Secondary Metals

Remelt aluminum No. 12	12.50
Brass ingots, 85-5-5-5	11.00

Quicksilver Unchanged

New York—Quicksilver is quiet and unchanged at $106 to $108 a flask.

Metals

Zinc Prices Firm Up but Copper and Tin Show Weakness—Demand Is Slow

New York—The zinc market is distinctly stronger, but copper and tin are weaker and other metals have shown practically no price change. Business in all nonferrous metals has been extremely quiet in the past week, even the strength in zinc being based more on reluctance of producers to sell than on eagerness of consumers to buy.

Consumption of metals has tapered off further in accord with the usual year-end activity, but otherwise there have been few significant developments one way or another.

Copper—While the copper market appeared to be firming up to 12.00c, the level which producers have held for several weeks, the trend turned rapidly in the opposite direction last week. Custom smelters have been willing to sell at 11.00c in the past day or two, but have found little interest at any price. A few days earlier they were firm at 11.50c. At that time the recovery in the custom smelter price was the signal for renewed profit-taking in the outside market and metal appeared slightly under this level. Mill products still are quoted on the basis of 12.00c for copper but little business is being done.

Zinc—Output was cut about 9000 tons in November, with the result that stocks increased only about 1500 tons. This was the smallest rise in a year and a half. It now appears as if December output might be a shade less than that of November, and that even a small seasonal increase in demand after the turn of the year would mean a substantial reduction in stocks. Stocks remain equal to about five months' shipments at the current rate, but the prospect of better statistical balance has made smelters reluctant to sell much future metal except at higher prices.

Tin—Straits prices have sagged off gradually in the absence of demand. The market has fallen from relative stability around 26.00c a pound to 25.00c. Users appear to have fair inventories and so are not paying much attention to nearby, while on futures they are buying only on the breaks.

Lead—New business continues extremely light but prices remain steady.

Aluminum—New business is dull but prices of new metal are unchanged. Remelt metal is in a weak market.—*Daily Metal Trade.*

By-Product Prices Likely To Continue for First Quarter

New York—Distillate prices are firm. No immediate price changes are expected. First quarter business probably will be based on present quotations. Coke oven operations still are curtailed. Stocks of by-products are not large. While November was a slow month, there has been some increase in buying thus far in December. Toluol is slightly more active with a better demand from the automotive and lacquer trades. Industrial buying of benzol is not heavy, but motor fuel demands take care of the surplus. Phenol is unchanged with a fair demand from the drug trade. Industrial demand, however, is off. Naphthalene contracting for next season is well underway, comparing favorably with the volume of one year ago.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.95

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Dec. 3	11.50	12.12½	11.25	25.75	26.15	5.10	4.95	4.05	22.90	7.10	35.00
Dec. 4	11.50	12.12½	11.25	25.50	25.87½	5.10	4.95	4.10	22.90	7.10	35.00
Dec. 5	11.25	12.12½	11.25	25.37½	25.85	5.10	4.95	4.12½	22.90	7.10	35.00
Dec. 6	11.25	12.12½	11.00	25.37½	25.85	5.10	4.95	4.15	22.90	7.10	35.00
Dec. 8	11.00	12.12½	10.87½	25.12½	25.55	5.10	4.95	4.17½	22.90	7.10	35.00
Dec. 9	11.00	12.12½	10.75	25.00	25.40	5.10	4.95	4.20	22.90	7.06¼	35.00

Europe

British Tin Plate Makers Seek to Stabilize Prices—Steel Exports from Germany Increasing

London—(*By Radio*)—British tin plate manufacturers are endeavoring to stabilize prices by strengthening their association to include mills heretofore unrepresented. Substantial orders for tin plate have been booked from Australia and Holland.

The inventory period is beginning and conditions in the iron and steel industry are quieter. Continental competition still is severe. Some pig iron has been purchased for first quarter. Stocks at Middlesbrough are decreasing. November exports of pig iron from Middlesbrough amounted to 5961 tons, the smallest tonnage since January, 1927.

Domestic markets in Germany are quiet but exports are expanding, higher prices inducing a buying movement. Orders are being placed by telephone from Scandinavia. The French domestic trade is satisfactory and prices are firmer. Further improvement in steel prices is reported in Belgium.

British Steel Prices Decline While Continental Quotations Rise

Birmingham, Eng.—The week has been notable for several price changes and in each case British material has gone down and Continental material moved upwards. A meeting of steel and tin plate manufacturers decided to abandon the present minimum price of 17s ($4.14). The minimum price scheme has been in operation for some years but price cutting by outside manufacturers has been frequent lately and this has had some influence towards removal of the restriction. The price of tin plate bars has also been reduced by 15s ($3.64) to £5 ($24.30) to combat severe competition from the Continent. It is still possible to buy Continental steel at £3 17s 6d ($18.82), delivered in the South Wales area.

Galvanized Sheets Down

Galvanized sheet makers have also made a reduction of 7s 6d ($1.81) in 24-gage corrugated, bringing the price down to £11 5s ($54.67).

The stringency in the Continental market a week ago was quickly followed by withdrawal of German quotations for billets. Consumers who sent inquiries to Birmingham merchants during the week found themselves unable to obtain any indication of the reopening of the German market. Values of Continental material generally showed some stiffening and foreign producers were reluctant to accept orders for semifinished material. Small steel bars were quoted at £4 5s ($20.65) f.o.b., whereas a week or two ago they were offered at less than £4 ($19.44). This development on the Continent has not created much stir in the market except to impart some encouragement to home producers although the latter are fully aware that the upward movement will have to travel far before foreign prices can be called competitive.

Reduction Brings Some Trade

The reduction in Midland pig irons last week has diverted some business which might otherwise have gone to Luxemburg. Even now it is possible to buy at a fraction under the Northampton price, but Midland consumers will no doubt prefer to deal at home.

The Central Africa railway and the Trans-Zambesia railway have accepted the tender of the Cleveland Bridge & Engineering Co. for construction of the Zambesi bridge and southern approach at a cost of just under 1½ million sterling. Of this £550,000 will be spent in this country and work on the Continent will probably last 4½ years.

Dorman Long & Co., Middlesbrough, have received a contract worth £66,000 for construction of a new bridge and approaches at Rhyl, one of the north Wales seaside resorts. About 600 tons of British steel will be used on this contract, which will last 15 months. Semifinished producers are feeling competition from the Continent and 1150 tons of steel bars were unloaded on the Tees last week.

Welsh steelworks, most of which are idle, are willing to make concessions to move accumulations of stock. On the Birmingham exchange soft billets were offered at £5 12s 6d ($27.33). Small steel bars rerolled from foreign billets have also receded to £7 7s 6d ($35.83).

The Staffordshire finished iron trade is struggling to keep its head above water. Mills operate about three days a week. Prices are stationary and represent the minimum at which it is possible to sell without loss.

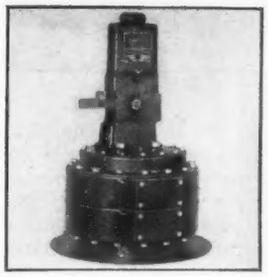
German Price Reduction Seems a Necessity

Berlin—The question of reducing German domestic steel prices has again become acute, following a recommendation of the Federal Economic council (Reichswirtschaftsrat) stating that the present high steel prices at home are unbearable for German consumers, and that a serious cut will be necessary. In this connection negotiations will shortly be started between the government and steelmasters, among whom the conviction of the necessity for a reduction of prices is growing. Dr. Ernst Poensgen, of the United Steel Works Co., recently declared that prices must be reduced to a radical extent. In trade circles it is believed that such a reduction would be about 15 marks per metric tons, but of course, so far nothing definite can be said. In the meantime, the iron and steel consuming industry is protesting against high prices, and it cannot be doubted that this question will not be settled before quotations are reduced.

Meanwhile, offers of cheap Belgian merchant bars and bands are disturbing the domestic market and further reducing the limited sales of producers. Deliveries of A-products and merchant bars further declined from 380,565 metric tons in August to 373,613 tons in September, but as the output has not diminished correspondingly stocks are accumulating steadily.

Plant to Be Shut Down

A most pessimistic view on further developments is reflected in the decision of the Cast Steel Works, Doehlen, Saxony, which is owned by a syndicate headed by the United Steel Works Co., to lay idle its whole plant. The syndicate claims that the capacity of the German steel plants is too large, and that it has not been possible to procure sufficient orders for



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THAT MAKE BIG LOSSES...BY ADDING 1% NICKEL

Little leaks in gas control apparatus may cause improper operation which may result in big losses. That's why Shallcross Control Systems for coke, gas and steel plants are made pressure tight by using Nickel Iron rings • By adding only one per cent Nickel to a proper base mixture the manufacturers obtain Nickel Iron rings which have good machinability as well as essential strength and density. These long wearing Nickel Iron rings assure absolutely pressure tight units and help eliminate troublesome leakers • Nickel Alloy Iron meets today's exacting demands for a better material than ordinary cast iron. Our casting specialists will gladly work with you in developing a suitable Nickel Iron to meet your individual requirements.

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that particular plant, so that this year's balance sheet will show a loss of about 50 per cent of its capital stock. The state of Saxony is seriously objecting, but so far in vain, to the closing of the works, owing to the increase of unemployment resulting therefrom. The Vereinigte Konigs-und Laurahutte is again passing its dividend. The Rheinische Stahlwerke A. G. states that the profits from coal sales are just sufficient to meet the necessary expenses for depreciation. On the other hand, the Charlottenhutte is again paying a 14 per cent dividend, and the Gutehoffnungshutte has raised its dividend from 7 to 10 per cent, owing to family reasons of the majority group. The Hoesch steelworks, which for some time have been co-operating closely with the Koln-Neuessen Coal Mining Co., propose to merge with the latter company, in which case a new heavy industrial combine in western Germany would be founded.

Export Prospects Slack

Export business has of late revived in anticipation of an interruption of export sales by the Stahlwerksverband as far as overseas countries are concerned, but the market has again become slack, all the more so because the outlook is rather pessimistic. About 60 to 70 per cent of all steel orders booked are for export, whereas of the remainder, about one-third are so-called AVI orders, i.e. orders by domestic manufacturers for finished steel products which will be sold abroad and on which an export rebate is granted. Owing to this distribution of business, the profits from steel business are most depressed. On the export markets, competition from Belgium and France is maintained. The Soviets are asking for about 16,000 to 18,000 tons of merchant bars and about 6000 to 8000 tons of sheets, but on a basis of a 24-months' credit. German producers do not appear to be willing to take the business on this basis.

Double British Dole Asked

London—Christmas gift of a double dole at the holidays was refused in the house of commons as beyond the legal right of the legislators. The plea was to give the unemployed a larger payment to provide holiday cheer. The minister of labor, Miss Margaret Bondfield, opposed it as impracticable from a legislative point of view. Some speakers favoring the double dole thought it more important than some recent appropriations, including the subsidy for Covent Garden, which was held up as a gift to the middle classes while labor was starving.

British Trade Improves

London—There was an increase in exports of pig iron and steel from Great Britain in October, although the figures still were well below the averages of previous years. Exports of pig iron and ferroalloys in October were the highest since May.

Imports of iron and steel products in October also increased, the imports of pig iron and ferroalloys being the highest figure for the year to date. These imports came mostly from Belgium. Comparisons follow, in gross tons:

	— Imports —		— Exports —	
Mon. ave.	Pig iron and ferro-alloys	Other iron and steel	Pig iron and ferro-alloys	Other iron and steel
1927	50,715	316,455	27,580	322,100
1928	9,935	231,390	37,895	317,210
1929	12,310	222,410	45,430	319,520
1930				
Jan.	15,770	294,546	40,445	311,401
Feb.	24,252	235,144	26,865	267,422
Mar.	23,186	257,106	39,461	298,253
April	21,254	213,552	30,100	237,895
May	23,039	210,686	32,586	262,143
June	25,031	189,473	21,588	229,381
July	25,674	173,114	25,086	278,358
Aug.	21,931	173,473	22,026	218,828
Sept.	30,484	193,345	13,459	186,821
Oct.	31,395	233,085	26,177	238,193

To Hold Spring Trade Fair

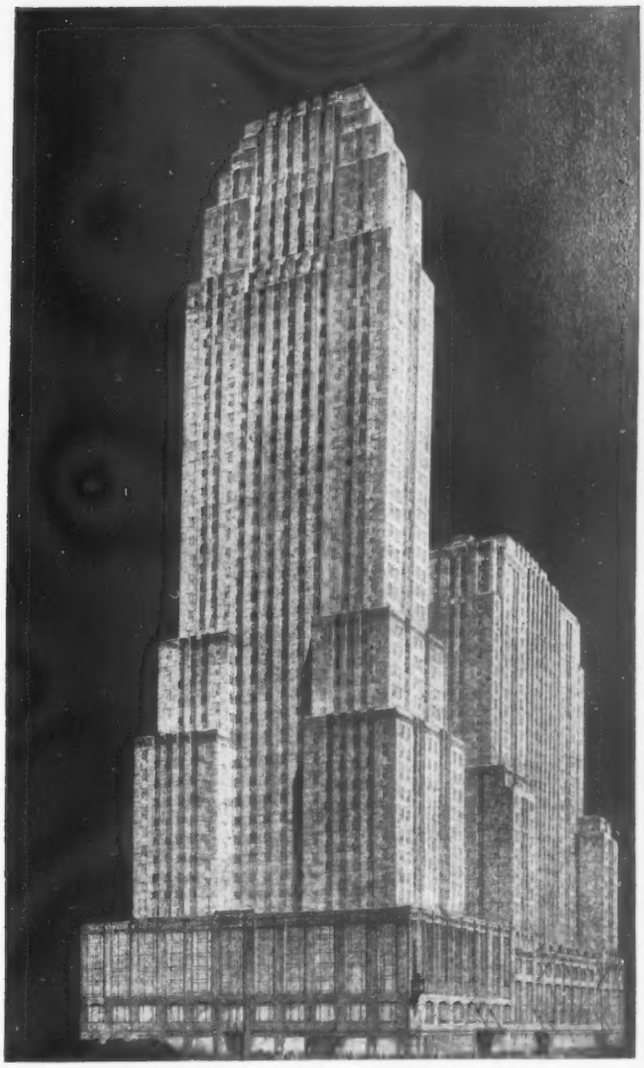
The spring trade fair annually held at Leipzig, Germany, will be open in 1931 from March 1 to 7 with 10,000 exhibits from 22 countries, forming a large and varied market. The exhibits of similar merchandise will be displayed in the same or closely grouped buildings, there being some 67 buildings in all.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, December 8	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$15.43	3 3 6*	$12.15	2 10 0	$12.15	2 10 0	$13.37	2 15 0
Basic-bessemer	15.92	3 5 6†	11.66	2 8 0	11.66	2 8 0	13.37	2 15 0
Hematite, Phosphorus 0.02-0.05	17.25	3 11 0	.....	.....	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$27.34	5 12 6	$17.98	3 14 0	$17.98	3 14 0	$17.98	3 14 0
Wire rods	41.31	8 10 0	29.16	6 0 0	29.16	6 0 0	29.16	6 0 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$32.08	6 12 0
Merchant bars	1.68c	7 15 0	.95c	4 6 0	.95c	4 6 0	1.07c	4 17 0
Structural shapes	1.68c	7 15 0	.84c	3 16 0	.84c	3 16 0	.96c	4 7 0
Plates, ship, bridge and tank	1.79c	8 5 0	1.07c	4 17 0	1.07c	4 17 0	.83c	3 15 0
Sheets, black, 24 gage	1.90c	8 15 0	1.91c	8 13 9	1.91c	8 13 9	1.93c	8 15 0
Sheets, galvanized, 24 gage, corrugated	2.44c	11 5 0	2.35c	10 13 9	2.35c	10 13 9	2.31c	10 10 0
Bands and strips	2.17c	10 0 0	1.03c	4 13 9	1.03c	4 13 9	1.02c	4 12 6
Plain wire, base	2.06c	9 10 0	1.29c	5 17 6	1.29c	5 17 6	1.43c	6 10 0
Galvanized wire, base	3.04c	14 0 0	1.49c	6 15 0	1.49c	6 15 0	1.61c	7 6 0
Wire nails, base	2.39c	11 0 0	1.30c	5 18 0	1.30c	5 18 0	1.32c	6 0 0
Tin plate, base box 108 pounds	$ 3.89	0 16 0	.....	.....	.....	.....	$ 8.26	1 14 0
Domestic Prices at Works or Furnace—Last Reported				Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$15.43	3 3 6	$15.33	390(2)	$16.18	580	$19.80	83
Basic pig iron	15.80	3 5 0	20.63	525(1)	12.83	460	21.12	88.50
Furnace coke	3.16	0 13 0	6.60	168	5.02	180	5.13	21.50
Billets	27.34	5 12 6	21.62	550	17.02	625	28.04	117.50
Standard rails	1.79c	8 5 0	1.41c	785	1.61c	1,240	1.47c	136
Merchant bars	1.68c	7 15 0	.98c	545	.98c	750	1.48c	137
Shapes	1.84c	8 10 0	1.12c	620	.94c	720	1.45c	134
Plates, ship, bridge and tank	1.95c	9 0 0	‡1.37c	760	1.07c	820	1.65c	153
Sheets, black, 24 gage	1.90c	8 15 0	2.63c	1,460	2.41c	1,850	1.36c	126
Sheets, galvanized 24 gage, corrugated	2.44c	11 5 0	3.74c	2,075	2.73c	2,100	3.67c	340
Plain wire	2.06c	9 10 0	1.85c	1,200	2.15c	1,650	2.34c	217
Bands and Strips	2.17c	10 0 0	1.23c	685	1.43c	1,100	1.72c	159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.16) f. o. b. Ferromanganese £12 5s 0d ($59.54) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.



And again CARNEGIE BEAMS are selected for important Cincinnati project

CAREW TOWER DEVELOPMENT
CINCINNATI, OHIO

Walter W. Ahlschlager, *Architect*
Delano & Aldrich, *Assoc. Arch'ts*
Lieberman & Hein, *Struct. Eng'rs*
American Bridge Co., *Fabricators*
Starrett Bldg. Co., *Gen'l Cont'rs*

Under construction in Cincinnati is the magnificent Carew Tower Development, combining under one roof an office building, hotel, garage and department store. The selection of Carnegie Beams to form the steel framework of this important structure is another splendid tribute to these popular sections.

Carnegie Beams merit the investigation of anyone interested in efficient and economical construction. Their advantages are not limited to major building operations, but apply to any type of construction involving the use of structural steel, regardless of size or type of architecture. Our engineers are always at your service.

CARNEGIE STEEL COMPANY · PITTSBURGH

Subsidiary of United States Steel Corporation 96

Machinery

DECEMBER, notorious as a low month for machine tool sales, defies tradition by showing certain distinct improvements over October and November. Signs appear which indicate that two large electrical equipment manufacturers are beginning to purchase machinery, which it is hoped will break the evil spell of watchful waiting. The annual meeting of the American Society of Mechanical Engineers and the Power show in New York are credited with a stimulating effect in several directions. With stocks of machines and parts becoming exhausted, the low ebb of machine tool employment will be relieved by a relatively slight upswing.

New York—Slight improvement in inquiry is reported for machine tool equipment by a few dealers and builders, but general conditions as to orders and interest in new machinery remain unchanged. Orders are confined to one or two tools at a time, well spread. While several manufacturers of electrical equipment are showing some interest in new machinery for next year, early action is not expected. Railroads are taking but few machines, although Norfolk & Western is still considering a list which may be placed in Philadelphia territory. Shipyards, while active in most instances, are not buying new equipment. Steel fabricators are also inactive. As a rule, special equipment is leading in sales. Inquiry was stimulated somewhat last week by the Power show and the annual meeting of the American Society of Mechanical Engineers. The bulk of the business being placed at this time is from smaller shops. The larger manufacturing plants are buying little. A can maker is reported to be operating overtime in the New York territory and may purchase some additional equipment.

Operating rates among ball bearing plants are spotty. One Connecticut bearing plant is working four days a week and may go higher on automobile business. Chevrolet has completed new models and is in production on them. Most of the other bearing plants are not doing so well, although one plant in Newark is slightly more active. Grinding machine buying is slow. Russia has still much equipment to buy, including machinery for a tractor plant.

Milwaukee Electric Crane & Hoist Corp. has booked orders covering one 30-ton gantry crane and one 20-ton low head crane for the Lehigh Valley railroad. The same builder also has booked an order for one 25-ton gantry crane for the Grand Trunk railroad.

Worcester, Mass.—The machine tool market remains stagnant. Grinder orders have shown no indication of revival, in spite of the reported revival of activity in automobile production. Other lines also continue to lag, but little interest being shown in lathes and drills for instance. Active inquiries are few and foreign trade appears to have suffered a temporary set back.

Pittsburgh—Better activity in some cases is noted in machine tools, one seller reporting last week's sales the best in three months. Orders generally fail to show improvement, however compared with the November volume. Inquiry is more active with a broader interest noted in new equipment. Railroad inquiry still is restricted and steel plants have no large lists pending. Westinghouse Electric & Mfg. Co., which has bought little equipment for its East Pittsburgh plant during the past few months, is expected to buy more heavily during the first quarter of 1931.

Cleveland—A distinctly better feeling prevails in Cleveland machine tool circles this week. Contrary to expectations, December, which notoriously is a poor month in normal times, has brought with it an upswing from the dead low levels of October and November. Orders actually have been received during the past week by several companies. In no case are they large orders, but they have originated in places where reawakening of buying means more orders and more substantial orders to come. Active hope is expressed that the release of orders by two large electrical interests will encourage other important machine tool users to do likewise. It is believed that this tendency to await the move of the other fellow before making a move is a powerful factor in delaying business recovery. The indications are that the spell is beginning to break.

Improved activity on the part of certain important manufacturers of automotive parts and accessories is being held. This has relieved unemployment to some extent and although it has had no effect to speak of on the sale of machine tools, it has helped in the direction of small tools, dies, etc.

Russian business continues to hold the center of the stage as far as the export market is concerned and official representing important commissions have just visited Cleveland to follow up existing orders with a possibility of increasing them in some cases.

Chicago—Machine tool sales are making no gains in this territory, despite a slightly better feeling in some quarters because of moderately revived interest on the part of a few prospective buyers whose programs are in the making. No outstanding inquiries have appeared lately but a few scattered single item proffers are out. Fair sales of parts and attachments are reported, and a few large tools were closed, including a heavy-duty boring mill for a manufacturer in the Chicago district. Sheet metal equipment, which in the last few weeks has been moving well, now has slumped off sharply. The inquiry for Lane Technical high school may not be out for another 30 days. Several houses report November business the lowest since 1921-22. It is indicated that there will be virtually no carry-over of orders into next year.

Machinery Exports Show Satisfactory Volume

United States exports of industrial machinery for the ten months ended October, 1930, fell short of the abnormally large volume of the corresponding period in 1929, according to statistics compiled by the industrial machinery division, department of commerce, Washington. Nevertheless, the value of these exports during this 1930 period was 12 per cent in excess of the 1928 period, 25 per cent in excess of the 1927 period, and far ahead of any other similar period since 1921. This favorable showing has been made in spite of a decline which began about the middle of the year and which has persisted.

American machine tools maintain their popularity abroad, as is attested to by the fact that engine lathes valued at $2,064,000, turret lathes valued at $1,331,000, milling machines valued at $2,867,000 and drilling machines valued at $1,898,000 were exported during the first ten months of 1930. In every case the values of these exports are substantially ahead of those during the corresponding period of 1929.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BRISTOL, CONN.—Bristol Co., care of S. R. Bristol, Waterbury, Mass., plans alterations and additions to its plant here. E. A. Webster, 51 West Main street, Waterbury, is architect. Cost is estimated at $50,000. Company makes recording instruments.

EAST HARTFORD, CONN.—Texas Co., 31 St. James avenue, Boston, is closing bids for a group of buildings here, to include a warehouse, boiler unit, garage and two pump houses, latter to be 15 x 16 feet each. Cost is estimated at $50,000. Plans are private.

MIDDLEBORO, MASS.—Repair shop of troop D of state police recently was damaged by fire.

NEWBURYPORT, MASS.—City, W. H. Little clerk, is receiving bids for the erection of a boiler house at Plum island. Cost is estimated at $50,000.

WORCESTER, MASS.—City is advertising for bids for construction of a pumping station at Quinapoxet waterworks.

AUBURN, R. I.—Universal Winding Co., manufacturer of winding machinery, has let contract to A. F. Smiley Construction Co., 210 Main street, Pawtucket, R. I., for a 2-story plant addition. Cost is estimated at $45,000.

New York

BUFFALO—Niagara Falls Smelting & Refining Co., 2208 Elmwood avenue, will award contract for construction of a forge shop. Approximate cost, with equipment, $40,000.

BUFFALO—Niagara Hudson Power Corp., recently noted as planning construction of a power plant at Hadley, N. Y., is reported to plan expenditure of $28,000,000 next year. A portion will be spent for power plant expansions and 15 new substations. (Noted Oct. 9.)

GHENT—New York State Electric & Gas Co., Albany, N. Y., will build a power plant addition here.

LOCKPORT—Lockport Engineering Works has been incorporated with $100,000 capital by Doty & Leibold, to operate an engineering works.

NEW YORK—Hansen & Rees have been incorporated with $100,000 capital by Guernsey & Guernsey, Jamaica, N. Y., to deal in metal weatherstrips.

NEW YORK—Bronx Warranty Roofing & Sheet Metal Works has been incorporated with $10,000 capital by S. J. Winkler, 154 Nassau street.

NEW YORK—Everlast Iron & Wire Works has been incorporated with $10,000 capital by M. Altschuler, 501 East 161st street, to make iron products and wire.

NEW YORK—Triangle Bronze & Iron Co. has been incorporated with $10,000 capital by L. Lebsky, 570 Seventh avenue, to deal in metal construction supplies.

Pennsylvania

CLEARFIELD—Johnson Machine Co. has been incorporated with $25,000 capital by Clair Ogden, treasurer, to conduct a foundry and machine shop to manufacture and repair hardware and brick plant machinery and industrial equipment.

NEW BRIGHTON—William Leard Co. Inc., manufacturer of connecting rods and other products, has let contract for a 1-story plant, 40 x 109 feet.

PHILADELPHIA—Ace Oil Corp., West Erie avenue and Lawrence street, will build a warehouse and shop at a cost of about $4000. Contract has been awarded to F. Ferraco, 3631 North Lawrence street.

PHILADELPHIA—Philadelphia Storage Battery Co., Victory building, has acquired the Holmes mill at Allegheny avenue and A street. Plant consists of a 5-story building containing 100,000 square feet of floor space.

PHILADELPHIA—Acme Blower Co. Inc. has been incorporated with $6000 capital by Harry K. White, 215 Pembroke avenue, Wayne, Pa., treasurer, to manufacture and deal in devices and equipment for heating purposes.

PHILADELPHIA — Westinghouse Electric & Mfg. Co., Walnut and Thirtieth streets, will make improvements in its South Philadelphia works, of which J. E. Barkle is manager. Included in plans is the conversion of manufacturing space formerly used for machine work on marine and steam equipment, into a shop for equipping and testing locomotives. Total expenditures will approximate $300,000.

PITTSBURGH — Standard Steel Fabricating Co. has been incorporated with 1000 common shares by Clark Miller, 5023 Frew avenue, treasurer, to manufacture and fabricate metal, structural steel, machinery and castings.

READING—Reading Heater & Sprinkler Co. has been incorporated with $10,000 capital by Veronica L. Collins, to manufacture and deal in heating, sprinkler, plumbing, ventilating and power plant systems and equipment.

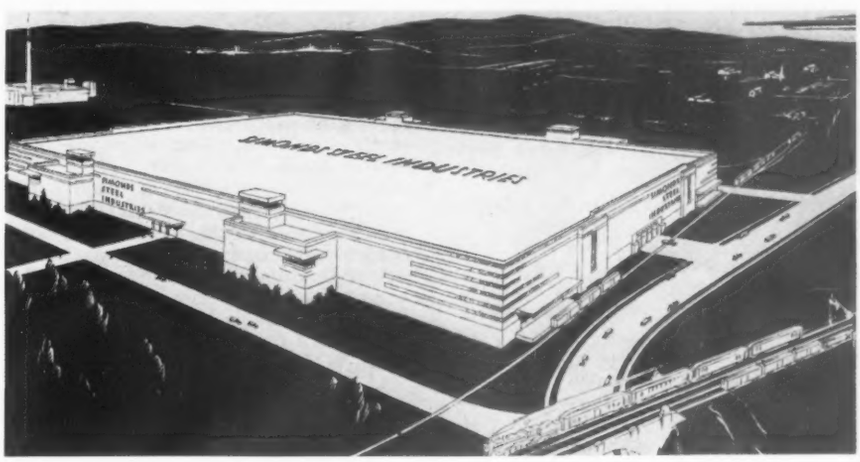
ROCHESTER—Rochester Machine Co. has been incorporated with $30,000 capital by Hugh J. Hogan, treasurer, to manufacture and deal in metal products, machinery and motors.

New Jersey

CAMDEN — Superstrong Machine Co. has been incorporated with 1250 common shares by Joseph C. Haines, 9 Clinton street, to manufacture machinery.

EAST ORANGE—C. M. Grey Mfg. Co., 358 Central avenue, will build a 2-story die casting plant on Shepard avenue near Central avenue, preliminary plans for which are being made. Estimated cost, $40,000.

MONTCLAIR—Public Service Production Co., 80 Park place, Newark, N. J., will occupy a plant, including



NO WINDOWS, NO SKYLIGHTS, YET IDEAL FOR EMPLOYES

Architect's drawing of windowless factory to be constructed by the Austin Co., Cleveland, for the Simonds Saw & Steel Co., Fitchburg, Mass. Illumination and ventilation have been worked out scientifically

boiler house, shop and garage, at Greenwood avenue here. Rudgers Building Supply Co., 101 Greenwood avenue, Montclair, is having private plans prepared for the plant. Cost is estimated at $150,000.

NEWARK—Huntman Propeller Co. has been incorporated with 6000 common shares by Pilgrim & Ritger, 43 Lincoln place, to deal in machinery.

NEWARK—Economy Welding & Body Repair Co. Inc. has been incorporated with $100,000 capital by Samuel S. Ferster, 790 Broad street.

NEWARK—Utility Electric Corp. has been incorporated with $125,000 capital by Emanuel Millman, to make electrical machinery.

Ohio

CLEVELAND — McNeal Co., 5046 Lakeside avenue northeast, has leased space in the former National Iron & Wire plant at 3901 Hamilton avenue northeast, for new quarters and expansion. Company rebuilds steam shovels.

CLEVELAND—Board of education is inquiring for equipment and machinery for shops for a proposed 3-story high school to be built at West 140th street and Lakota avenue. Cost of the entire project is estimated at $800,000. Maturity about April.

COLUMBUS—American Zinc Oxide Co. is expanding its warehouse facilities by leasing 5000 square feet of floor space at 41 Vine street.

COLUMBUS — War department, Washington, proposes to buy pumps and other equipment for the ordnance depot here.

COLUMBUS—Ralston Scales Corp., subsidiary of the Ralston Steel Car Co., will expand facilities for the manufacture of counter scales. Present plant is 60 x 220 feet. Production will be stepped up to about 50 scales daily. John J. Munsell is general manager of the Ralston Scales Corp. and F. E. Symons is president.

COLUMBUS—Columbus Heating & Ventilating Co. and Buckeye Blower Co. have been acquired by Surface Combustion Co., Toledo, O., subsidiary of Henry L. Doherty & Co. Latter will expand the facilities of the gas equipment division of the Columbus Heating company for increased production.

LORAIN—National Stove Co., subsidiary of American Stove Co., proposes to build a unit to be used as an enameling plant. Plans are private. Cost is estimated at $250,000. National company makes cooking and heating stoves.

SHELBY—Michigan Steel Tube Products Co., Charles E. Miller president, Holbrook and Buffalo streets, Detroit, has organized a subsidiary to be known as the Miller-Shelby division, and will establish a plant here for the manufacture of parts for aircraft, automobiles and tractors, accessories for automobiles, and special rolled shapes for aircraft, architectural and automotive purposes. Local division, with John R. Miller as manager, will establish operations at the site of the Brightman Mfg. Co.

Indiana

CRAWFORDSVILLE—B. Remley will build a machine shop and garage, 82 x 130 feet, at 120 West Market street at a cost of about $40,000. C. Beeson is architect.

INDIANAPOLIS—Marmon Motor Car Co., G. M. Williams president, will establish operations for the manufacture of automobile bodies. Plant unit No. 3 will contain finishing department, also facilities to be used by the Hayes Body Corp., Grand Rapids, Mich., for construction of body shells. Hayes company, with plant here, has provided Marmon bodies in the past.

SOUTH BEND—South Bend Current Controller Co., 247 LaPorte avenue, is considering construction of a plant, to be built according to private plans. Approximate cost, $50,000.

Michigan

CHELSEA—Chelsea Foundry & Mfg. Co. Inc. has been incorporated with $50,000 capital for the manufacture of grey iron and steel castings.

CHELSEA—Lewis-Clark Radio Laboratories will be established here by Fred H. Lewis, Ann Arbor, Mich., and Clyde Clark and J. H. Kuhns of Jackson, Mich. Company will start production of radio receiving sets in the former plant of the Chelsea Rubber Co.

HOLT—Holt Mica Spark Plug Co., recently incorporated with $60,000 and 100,000 no par shares, will build a plant here at a cost of about $40,000. Clayton E. Hunt is president of the company, which will manufacture spark plugs, automobile accessories and screw machine products.

IRONWOOD — Ideal Carlock Shoulder Co., 208 South Suffold street, has been incorporated with $5000 capital by A. W. Holmberg and Harry Nydahl, to make car-lock shoulders.

PONTIAC — Cox Ferrous Metal Foundry, 608 Auburn avenue, is a new concern here, specializing in the manufacture of copper, brass and aluminum castings. R. B. Cox is owner and George Dixon is manager.

SOUTH HAVEN—Gordon-King Co., 1435 West Fifteenth street, Chicago, manufacturer of malleable products, through an arrangement with the industrial committee of the local chamber of commerce, will transfer operations here and occupy the plant formerly used for the manufacture of organs. W. M. King is president.

Illinois

CHICAGO—Link-Belt Supply Co., 418 South Third street, Minneapolis, plans to build a 2-story machine shop addition, 56 x 90 feet, at a cost of $25,000.

CHICAGO—Metal Shapes Inc., 2634 Fullerton avenue, has been incorporated with $20,000 capital by Cavender, Milchrist & Kaiser, Burnham building, to deal in metal work of all kinds.

CHICAGO — Accurate Spring Mfg. Co., 2035 West Pershing road, has been incorporated with $5000 capital by Stein, Mayer & David, 1660 First National Bank building, to make machines and machine parts.

CHICAGO—Seymour Mfg. Corp., 7461 South Chicago avenue, has been incorporated with $40,000 capital by Raymond J. Roth, 111 West Monroe street, to make electrical and lighting equipment.

CHICAGO—Admiral Mfg. Corp., 2646 West North avenue, has been incorporated with $20,000 capital by Gracek, Kamerman & Tark, 77 West Washington street, to make clocks, household utensils and furniture.

CHICAGO—Jones & Laughlin Steel Corp. advises through F. S. Bund, assistant manager of the Chicago warehouse, that a warehouse addition being built is 102 x 494 feet. One 7½-ton crane and one 15-ton crane will be installed. M. J. Boyle & Co., 105 West Monroe street, are contractors. (Noted Nov. 27.)

GRANITE CITY—H. Watson, 1710 State street, is reported to be in the market for an air compressor.

PEORIA—C. & F. Mfg. Co., 1028 South Adams street, has been incorporated with $45,000 capital by Jack, Irwin & Seidenberg, Jefferson building, to make vending machines.

Southern States

BIRMINGHAM, ALA.—Repair shop and wash house of the Western & Alabama railroad recently was damaged by fire. Approximate loss, $20,000.

BIRMINGHAM, ALA.—Ray Lange, Thomas Bowron and Paul Angel, trustees for the Alabama Educational foundation, will administer $5,000,000 fund for the establishment of a trade school here.

BIRMINGHAM, ALA.—City will receive bids about Dec. 15 for construction of a hangar unit to accommodate 25 planes, to be built at the municipal airport. A. J. Hawkins is city engineer. (Noted Aug. 7.)

WILMINGTON, DEL. — Improved Lithography Corp. has been incorporated with $100,000 capital by Registrar & Transfer Co., to make photo-offset machinery.

WILMINGTON, DEL.—General Seal & Lock Corp. has been incorporated with $150,000 capital by Delaware Registration Trust Co., to make locks and seals.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids Dec. 16 for motor-driven saw filing, mortising, variety grinder, drill and brake machines, roller, pipe, tube and nipple-cutting machine complete with motor, motor-

driven metal shaping machine, motor-driven precision lathe, office duplicating machine, aluminum metal sheets, motor-driven vertical keyseater, motor-driven high speed metal cutting saw.

AUGUSTA, GA.—City proposes to build a power plant at a cost of about $1,000,000, plans for which are being prepared. Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo., is engineer.

WALTON, KY.—City council will install pumping and auxiliary equipment in the municipal waterworks. Approximate cost, $25,000.

NEW ORLEANS — Superior Sheet Metal Co. has been incorporated with $20,000 capital by S. J. Tennant, Union Indemnity building, secretary-treasurer.

BALTIMORE—Maryland Foundry Co., 423 Calvert building, has been incorporated by Charles F. Goldberg, to operate a foundry.

LAUREL, MISS.—City, M. W. McLaurin mayor, is considering erection of a hangar at the municipal airport.

FAYETTEVILLE, TENN.—Kennedy-Van Saun Mfg. & Engineering Corp., 2 Park place, New York, plans to build a plant here for the manufacture of crushing and grinding machinery. Cost is estimated at $75,000.

LYNCHBURG, VA.—Storage building of the Lynchburg Iron & Metal Co. recently was damaged by fire. Loss is estimated at $14,000.

NATURAL BRIDGE, VA.—Natural Bridge of Virginia Inc. advises through John Temple, resident director, that in addition to the generator equipment recently noted, company is considering purchase of a 125-horsepower diesel engine unit, used. (Noted Dec. 4.)

Missouri

BETHANY—Great Lakes Pipe Line Co., Ponca City, Okla., has let contract to D. C. Bass & Sons, Enid, Okla., for a pumping station, 50 x 74 feet, to be built here, and a boiler house, 24 x 50 feet. Company has awarded to same contractor the contract for construction of identical units to be built at Osborne, Mo.

KANSAS CITY—Acme Furnace & Sheet Metal Works, 407 Southwest boulevard, will build a shop, 50 x 100 feet.

KANSAS CITY—Automatic Safety Bumper Co. has been incorporated with $100,000 capital by A. E. Smith, 1207 Grand street.

KANSAS CITY—Victor Mfg. Co. has been incorporated with $50,000 capital by A. E. Smith, attorney, 716 Lee building, to manufacture washing machines.

Arkansas

HARRISON—W. A. Baird and F. L. Hathaway, Chanute, Kans., are reported to plan the erection of a machine shop here.

Oklahoma

BLACKWELL—City will receive bids until Dec. 18 for a 50-horsepower motor direct connected to a centrifugal boiler-feed pump for the waterworks.

BRISTOW—Marathon Oil Co. will enlarge its refinery here and erect additions, including a pump house and machine shop. W. M. Fraser is plant superintendent.

OKLAHOMA CITY—B. & B. Machine Works, 102 West Choctaw street, has let contract for a warehouse addition, 20 x 38 feet.

PONCA CITY—Great Lakes Pipe Line Co., constructing a gasoline pipe line from here to Des Moines, Iowa, has awarded contract to Arthur G. McKee & Co., 2422 Euclid avenue, Cleveland, O., for seven of the pumping stations and adjoining boiler houses on the line. Total cost of the project is estimated at $650,000.

WATONGA—City proposes to erect a municipal light and power plant, plans for which are being prepared. L. Boughton is engineer.

Texas

AMARILLO—American Pipe & Junk Co. has let contract for a warehouse addition, 50 x 80 feet.

HOUSTON—Universal Clock Co. has been incorporated with $50,000 capital by Joseph Culdarena, to manufacture timepieces.

TEMPLE—City, W. W. Sellers mayor, is receiving bids for diesel engine units and auxiliary equipment for a power plant addition.

YOAKAM—City has asked estimates on machinery and equipment for a municipal light and power plant to be built here.

Wisconsin

EAU CLAIRE—Eau Claire Airways, John C. Simpson manager, proposes to build a hangar at the State street airport. A. W. Bayer, architect, Kelley building, is preparing plans. Steel doors will be used.

MADISON — Advance Machine Works, recently organized, is establishing a plant at 319 East Wilson street for the manufacture of pumps for shallow and deep wells.

MANITOWOC—City board of vocational education has authorized a bond issue of $200,000 for building and equipping a new vocational institute.

MILWAUKEE—Board of school directors, F. M. Harbach secretary and manager, will build a 2-story service building, 76 x 100 feet, at Thirty-eighth and St. Paul avenues.

RACINE—City board of vocational education has awarded contracts for the erection of a 1-story addition to the vocational school. Estimated cost, $25,000.

STEVENS POINT—Pumping station addition will be built at a cost of $40,000 by the Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. Two 50,000-gallons-per-minute pumps will be installed.

SUPERIOR—City council will build a municipal garage and service building, 75 x 140 feet, at a cost of about $25,000. M. G. Beckley is city clerk.

Kansas

KANSAS CITY—Great Lakes Pipe Line Co., Ponca City, Okla., has let contract to D. C. Bass & Sons, Enid, Okla., for construction of a pumping station, 50 x 74 feet, and a boiler house, 24 x 50 feet.

KANSAS CITY—Board of public utilities proposes to install pumps, pumping equipment and power equipment as a part of waterworks expansions and improvements at Quindaro station. Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo., is engineer. Cost of the project is estimated at $500,000.

Nebraska

OMAHA—Union Pacific Bus Transportation Co., R. J. Walsh president, has let contract for a 2-story, 158 x 300-foot depot, garage and repair shop, to be built at Leavenworth and Twenty-second streets.

ORLEANS—Western Public Service Co., Scottsbluff, Nebr., will start construction of a light and power plant here. Estimated cost, $100,000, with equipment.

Colorado

DENVER—Plant of the Midwest Foundry Co., 200 Larimer street, recently was damaged slightly by fire.

DENVER—Public Service Co. of Colorado, Fifteenth and Champaign streets, proposes to make improvements and extensions to its power system, including additions to plants at Grand Junction, Alamosa, Boulder Canyon and Shoshone. Total cost of the project, approximately $1,000,000.

Pacific Coast

LONG BEACH, CALIF.—Long Beach City School district will build a vocational school at Willow and Pine streets. Cost is estimated at $150,000.

MARE ISLAND, CALIF.—Bureau of yards and docks, navy department, Washington, will receive bids until Dec. 25 for one 2000-kilowatt turbo-generator for the navy yard here, on specification 6362.

OAKLAND, CALIF.—Chrome Alloys Mfg. Co. is a new firm here, with 2400 square feet of floor space at Dennison and King streets. Company is engaging in the foundry business, manufacturing marine hardware, valves, canning machinery and metal novelties, the latter being made from Krom-Aloy. H. McFadden is shop manager.

REDWOOD CITY, CALIF.—Pumping equipment to be purchased by city includes two 400-gallons per minute pumps, two 500-gallons per minute

pumps and one 140-gallons per minute pump, to be used for sewage project. Cost is estimated at $146,000.

SANTA BARBARA, CALIF.—City proposes to build a vocational school in connection with a high school building program. Estimated cost of the project, $650,000.

PORTLAND, OREG.—Western Steel & Equipment Corp. has leased storage space at First and Stark streets.

ELLENSBURG, WASH.—Ellensburg Iron Works has been incorporated with $20,000 capital by F. A. Kern, attorney, Washington National Bank building. Tom Hamilton and John A. Sorenson are members of the firm.

SEATTLE—Plant of the Bacon & Matheson Forge Co., 17 West Lander street, recently was virtually destroyed by fire, with loss estimated at $40,000. Equipment and machinery was damaged. Company will rebuild at once.

SEATTLE—Tourtellotte-Bradley Co., manufacturer of steel casement windows, hollow metal work and metal furniture, will occupy a plant, 63 x 190 feet, now being built at Elliott avenue west and West Galer street. G. C. Wotherspoon is engineer.

SEATTLE—Service plant costing $50,000 will be erected at 529 First avenue south for Goodrich-Silvertown Inc., by Concrete Construction Co. Plans are by William Mellema, 1709 West Eighth street, Los Angeles. Unit will be 120 x 120 feet.

Dominion of Canada

CALGARY, ALTA.—Calgary Power Co., R. B. Baxter managing director, recently suffered loss of about $25,000 through damage done to its plant and equipment at Ghost river dam.

LONDON, ONT.—Dennisteel Ltd., 22 Dundas street, C. E. Jarmain manager, proposes to build a 1-story plant addition, 100 x 100 feet, for the manufacture of iron work for offices, fire escapes and lockers. Cost is estimated at $50,000. Equipment will be needed.

PETROLEA, ONT.—Superior Sugars Ltd., F. J. Potter president, 4886 Maplewood avenue, Detroit, proposes to build a sugar refinery here, to include blacksmith and machine shops. Cost of the entire project is estimated at $3,000,000. Equipment will be needed.

TORONTO, ONT.—Packard Cable Co. of Canada Ltd. has been incorporated with $75,000 capital by Wilfred C. James, Metropolitan building, to manufacture and deal in wire cables and other equipment.

TORONTO, ONT.—B. S. Wemp, mayor, city hall, is receiving bids for two 50-horsepower motors and complete control equipment.

TORONTO, ONT.—Hammond Co. of Canada Ltd. has been incorporated with 10,000 no par shares by H. S. Parkinson, North Ontario building, to manufacture and deal in electrical and mechanical appliances and devices.

MONTREAL, QUE.—Scrutan Co. of Canada Ltd., 3081 Ontario street east, is reported to plan the purchase of a 5-horsepower electric motor.

MONTREAL, QUE.—Bruce Peebles, Canada Ltd. has been incorporated with $50,000 capital by S. G. Dixon, 132 St. James street, to carry on the business of engineer and brass and iron founder.

MONTREAL, QUE.—Cross Coal-O-Matic Co. of Canada Ltd., Confederation building, a branch of Cross Coal-O-Matic Co., Kansas City, Mo., manufacturer of underfeed stokers, proposes to open a plant here. Operations will be in charge of Arthur Thomas.

New Trade Publications

CONVEYOR OVENS—Despatch Oven Co., 622-628 Ninth street, southeast, Minneapolis, in a current illustrated bulletin describes a number of typical installations of conveyor ovens made by the company in diversified industrial applications.

ROLL GRINDERS—In catalog H-31 the Landis Tool Co., Waynesboro, Pa., describes and illustrates its new type of roll grinders, showing details of construction and method of operation. Tables of specifications cover dimensions and equipment.

AIR TOOLS—Buckeye Portable Tool Co., Dayton, O., in its catalog No. 30, covers its line of portable air tools, designed to increase production in industry. In addition to illustrations and descriptions of the tools the catalog contains a chapter on care and servicing of the various tools.

BILLET AND BAR SHEARS—Buffalo Forge Co., Buffalo, N. Y., has issued bulletin No. 330, describing latest features of its line of billet and bar shears with electrically welded frames. Illustrations and tables of capacities are given. Accessories and special equipment are described.

CASTINGS—Production of dependable castings, which will stand up under strains and serve against heavy wear, is the subject of a leaflet being distributed by the Commercial Steel Casting Co., Marion, O. The suggestion is made that two castings that look alike may be of differing quality.

GRINDING WHEELS—Norton Co., Worcester, Mass., has issued a booklet titled, "A New Method of Marking Grinding Wheels." A section is devoted to explanation of the meaning of controlled structure in the manufacture of grinding wheels, and illustrations of wheel structure are given.

SAND MILLS—A folder from the Universal System of Machine Moulding & Machinery Co. Ltd., 13/15 Wilson street, London, Eng., illustrates and describes the sand rubbing machines of the company and points out the advantages of the machines in mixing damp molding sands.

TRAMRAIL—Gathering and proportioning the mix without rehandling is the subject of a bulletin by the Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O. Though applied to the ceramic industry it illustrates principles of materials handling applicable in many other branches of industry.

STEEL BUILDINGS—International Derrick & Equipment Co., Columbus, O., has issued a catalog of its standard steel buildings. Typical buildings for industrial service are illustrated and attention is called to savings possible by the use of standardized building parts. Engineering features of the design are described in application to industrial use.

INDUSTRIAL GERMANY—The tenth annual issue of its handbook on industrial and commercial Germany has been prepared for distribution by the Hamburg-American Line, 39 Broadway, New York. It contains a survey of Germany's economic position and a series of articles by experts dealing with the principal branches of industry. A list of fairs and expositions in Germany is given.

LUBRICATION—Pennsylvania Lubricating Co., Pittsburgh, has issued a bulletin on automatic pressure lubricating systems for roll necks, as part of its engineering service for rolling mills. It contains a historical sketch of the development of modern methods for lubricating these bearings, types of lubricating systems, proper lubricants, design of bearings and reduction of labor. Illustrations supplement the text.

ROTARY PUMPS—A 104-page book, catalog 58, has been issued by Geo. D. Roper Corp., Rockford, Ill., covering its hand and power rotary pumps for hydraulic service, transfer of power, and for circulating coolant. The book is designed to aid the layman in selecting proper pump equipment. Various types of gear and vane pumps are illustrated and their uses pointed out, with engineering data of value in solving hydraulic problems.

PRODUCTION ENGINEERING—A production engineering book, "Millholland Method of Flexible Manufacture" is published by Millholland Sales & Engineering Co., 1833 Ludlow street, Indianapolis. It contains data on production methods, horsepower, and end thrust for various size drills, and covers several special subjects on methods of milling and precision mechanical tapping. The book is available in a limited edition to plant executives interested in these subjects.